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The case for the goat, with the practical



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THE CASE FOR THE GOAT

SOME PRESS OPINIONS ON
THE FIRST EDITION

LANCET : *"Shows how easily anyone can become independent of the dairyman."*

MANCHESTER GUARDIAN : *"We commend the book to every householder."*

GLOBE : *"This sensible, up-to-date little book ought to be widely read."*

WESTMINSTER GAZETTE : *"Thoroughly trustworthy."*

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CHRISTIAN WORLD : *"Of great service."*

EDINBURGH EVENING NEWS : *"Of the utmost interest."*

DE TELEGRAAF (AMSTERDAM) : *"Written with great knowledge ; should be translated."*



ANGLO-NUBIANS.
Owner, Mr. H. E. Hughes.

(To face Title-page.)

THE CASE FOR THE GOAT

WITH THE PRACTICAL EXPERIENCE OF
TWENTY-FIVE EXPERTS

BY

“HOME COUNTIES”

AUTHOR OF “THE TOWNSMAN’S FARM,” “POULTRY FARMING: SOME FACTS
AND SOME CONCLUSIONS,” “COUNTRY COTTAGES,” ETC.

WITH INTRODUCTIONS BY

THE DUCHESS OF HAMILTON AND BRANDON

PRESIDENT OF THE BRITISH GOAT SOCIETY

AND

MR. H. RIDER HAGGARD

*AND MANY PHOTOGRAPHS OF PRIZE GOATS
AND GOAT STABLES*

SECOND EDITION



LONDON

GEORGE ROUTLEDGE & SONS, LIMITED

NEW YORK: E. P. DUTTON & CO.

1908

“ There is no house possessing a goat but a blessing abideth therein ; and there is no house containing three goats but the angels pass the night praying there.”—MAHOMMED.

“ The goats are the price of the field. And thou shalt have milk enough for the food of thy household.”—PROV. xxvii. 26, 27.

AD AMICOS
VACCÆ PAUPERIS

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A FEW PREFATORY WORDS

I. BY THE DUCHESS OF HAMILTON AND
BRANDON,

PRESIDENT OF THE BRITISH GOAT SOCIETY.

IT is a pleasure to call attention to the able way in which the subject of goat-keeping is dealt with in this book. I feel that the work should do much towards a better understanding of a misunderstood and often abused animal.

I have great hopes that the goat may become a valuable asset in the rearing of future generations of our people. The milk is excellent, and the animal requires less accommodation and grazing, etc., than the cow; therefore the goat is more suitable to cottagers.

The great bar to goats at present is the unfounded prejudice which exists as to their milk and flesh not being good to taste.

I speak from personal experience when I say

that when goats are kept clean, neither their milk nor their flesh has any objectionable quality. I prefer goat's milk to cow's, finding it more digestible. As for the flesh (when properly fed), except that in appearance it is whiter, it is indistinguishable from Welsh mutton. I may add that my own children have goat's milk, and that it has suited them very well.

Goats are the most convenient animals for the nursery supply, as they are so portable. My goats have travelled when the children travel—to the seaside, to Scotland, and even for a month's stay in London.

The goat is a nervous animal, but if it has never known ill-usage it is not too much upset by long journeys.

I am much interested in the subject of goat-keeping, as it seems to me that the constitution of the nation will suffer if the present state of things in many parts of the country—the poor unable to get *any* milk for their children—is permitted to continue.

N. HAMILTON AND BRANDON.

II. BY MR. RIDER HAGGARD.

I HAVE read "The Case for the Goat" with great interest, and am extremely glad to hear that it is going into another edition.

For several reasons I fear that it will not be easy to establish goat-keeping on a large scale in this country. Among these I may enumerate: (1) The mischief done by the creatures if they get loose, when, like the Evil One, who is so often made to bear their likeness, they roam up and down, seeking what they may devour—and finding it; (2) the lack of local markets for their milk, and the general necessity of killing the male kids; (3) the scarcity of "billies" suitable for breeding purposes.

On the other hand, I think that the goat should have a great future among small holders (who might keep a co-operative billy), and even among labourers who possess a garden. As we all know, one of the great evils in this country, and a potent cause of sickness or weakness in little children, is the lack of an adequate supply of milk in the cottages of the

poor. This want a goat or two would amply meet, to the great benefit of many a child, especially if it should be ailing, and at a very small expense.

Further, it seems to me that there is a considerable opening for goat-keepers in the neighbourhood of large towns, where the rich milk of goats would always be in demand for invalids and delicate infants.

May I add one word in appreciation of the book itself?

It seems to me an admirable treatise on the subject, and those who study it carefully can scarcely fail, should they venture upon the experiment of goat-keeping, whether in a large or a small way. Such, at any rate, is the opinion of a grateful reader,

H. RIDER HAGGARD.

INTRODUCTION TO SECOND EDITION

THIS Second Edition is honoured by the imprimatur of the President of the Goat Society, the Duchess of Hamilton and Brandon. Her Grace's personal experience, and the personal experience of Lady Dunleath (p. 99), the Hon. Rose E. Hubbard (p. 143), the Hon. Iris Mitford (p. 129), and other ladies, show that the goat is by no means to be regarded as exclusively the "poor man's cow."

The present issue has the further great advantage of the good word of Mr. Rider Haggard. Few people have had more favourable opportunities than the author of "Rural England" of discovering what excellent service might be rendered by the goat in many of our country districts.

Other valuable features of this edition are the data on goat-keeping (p. 153) contributed by Mr. Sam Woodiwiss, Editor of the Goat Society's "Herd Book" (who was ill

when the first edition was prepared), some new illustrations, and various additions and emendations. For one of the illustrations I am indebted to Mr. H. E. Hughes. The other four I am able to include by the courtesy of the Controller of H.M. Stationery Office.

The remarkably cordial reception which "The Case for the Goat" has received from the Press and from the Public, necessitating a second edition within a few months, is not the only encouraging thing in connexion with this little book.

All the complaints but one, which I felt it to be my duty to make in Chapter VIII. ("A Word with the Board of Agriculture"), in regard to the lack of interest in goat-keeping shown by the Government Department charged with the care of Rural Britain, seem in a fair way to be met.

The Board has exhibited a new attitude of friendliness to the "poor man's cow" by allowing me to contribute to its monthly *Journal* an article on "The Advantages of Goat-keeping."

Further, the omission from the Board's valuable leaflet series of a tract on the "poor

man's cow," to which I drew attention, is to be remedied, I believe, by the reprinting of this article.

Finally, an assurance has been given to the Secretary of the Goat Society that the Society (not private goat-owners) will be at once permitted to make that importation of stock animals for which I pleaded, in order that the new blood may be obtained which is so much required to enable the herds in this country to reach the highest standard. There will be a period of quarantine, as has been suggested.

The only outstanding matter is the omission of the Board to attempt a census of the goats in the United Kingdom. As *vacca pauperis* is included in the census of the Irish Department of Agriculture, there would appear to be no insurmountable difficulty in our own Department asking, if not from the fillers-up of its annual agricultural census papers in England, Scotland, and Wales, then from its district crop enumerators, or its recently appointed district correspondents, a computation of the number of goats in their respective areas. No doubt the usefulness of this step will be recognized before long.

It is, perhaps, desirable that I should add that I neither sell nor exhibit goats. My recommendation of *vacca pauperis* is entirely disinterested. Knowing as I do the scarcity of milk in the cottages of many rural districts, and the poor and tuberculous character of some of the milk vended in the suburbs of towns and cities, I feel that the claims of the goat, as a thrifty giver of rich, non-tuberculous milk, cannot be too widely known. It is an animal which, as the Goat Society has long maintained in its official circular, "supplies just enough milk for the ample requirements of an ordinary household during the greater part of the year, and, as it eats with avidity almost every kind of herb and vegetable, besides being of a hardy nature, is kept with very little trouble and at almost nominal expense."



YOUNG MALE TOGGENBURG.

ENGLISH NANNY.

Gives 6 pints daily.

Owner, Mr. G. C. MacAndrew.



ANOTHER ENGLISH NANNY.

THE CASE FOR THE GOAT

INTRODUCTION TO FIRST EDITION

THE basis of this little book is an article in the *Quarterly Review*, and contributions to the *Spectator*, *Field*, and *World's Work*.

But perhaps the most important part of the volume is the Appendix! There are in it the replies, in much valuable detail, which the most experienced owners of goats, from peeresses to farmers, were good enough to send me last year, in answer to twenty-four questions which, in the interests of goat-keeping, I ventured to address to every known owner of the "poor man's cow" in this country.

As my copies of the excellent "Book of the Goat," by Mr. H. S. Holmes Pegler, and the equally serviceable "Milch Goats," of which

Mr. Bryan Hook is the author, are dated as far back as 1886 and 1896, and the only other authoritative work on *vacca pauperis*, as far as I know, is in French, it seemed well worth while to go to some trouble and expense to collect up-to-date information for the benefit of the large number of people who are now being induced to take up goat-keeping. For the exceptionally useful data which my correspondents, in their interest in the cause of the goat, did not grudge the time to note down for me, I am very greatly obliged.

After careful consideration, it seemed to be the handiest course from the reader's point of view to place the replies to the circular in an Appendix. Arranged in the form in which they are printed, it is an easy matter to find instruction on any particular detail of goat-keeping. To have absorbed their contents in the text would have made the book inconvenient for reference.

In order to make the work of the utmost practical use, I have prepared an exceptionally

full Index, covering the contents of the Appendix as well as my own matter.

I need hardly say that it would not have been at all difficult to enlarge the volume to double its size. To have done this, however, would necessarily have added to its price, and so limited its opportunities of usefulness. The Goat Society (the veteran secretary of which, Mr. H. S. Holmes Pegler, may be addressed at Allerton House, Kingston-on-Thames) issues a series of leaflets dealing with any points which I have not found it necessary to touch.

I hope this little book, which from a financial point of view can hardly recompense the labour spent upon it, may help the good work initiated by Mr. Holmes Pegler, Mr. Hook, and some of those whose names are mentioned in its pages, of removing ignorant prejudice against the goat. It would be a great thing if this valuable animal could be more generally kept, not only in the country by rural residents, small holders, and labourers, but in the suburbs by possessors

of gardens—and of the children who so greatly benefit by the use of the most nutritious of all milks.

At a time when so much is talked and planned about small holdings, it is particularly desirable that the claims of *vacca pauperis* should not be overlooked. Three Acres and Goats are feasible in many cases where Three Acres and a Cow are not within reach. A cow locks up a considerable amount of capital, and as the owner of a single animal is not ordinarily given to stock insurance, an accident to the milk-giver is a serious loss. Besides, it is impossible, with a single cow, to maintain a continuous supply of milk. If several goats were substituted for the one cow, a continuous, if somewhat smaller, yield could be arranged, and a death in the herd would not be a serious matter. When it is realized that two-thirds of the holdings of agricultural land in this country are small holdings, it is possible to see large opportunities for goat-keeping beyond the cottager class, which is itself, as I hope to

show, particularly well placed for availing itself of the services of the "poor man's cow."

I have to thank Dr. G. W. Prothero, editor of the *Quarterly Review*, and Mr. John Murray for generously allowing me to reprint part of my contribution before the time at which republication from our leading review is ordinarily allowed. My obligations are also due to the editors and proprietors of the *Spectator*, *Field*, and *World's Work*. From the *Quarterly Review* and *World's Work* I have been most kindly permitted by Mr. Murray and Mr. Heinemann to use the blocks specified in the list of illustrations.

I am further indebted to Mr. H. E. Hughes, of Broxbourne, one of the most enthusiastic and successful of our goat-keepers, for his goodness in placing at my disposal his voluminous collection of *obiter scripta* about goats, and his own wide knowledge of the subject.

CHAPTER I

WHY GOAT'S MILK IS SO WELL WORTH HAVING

HALF A TON OF MILK FROM A GOAT IN A YEAR.—It is fabled that a little excursionist of the Country Holiday Fund once tearfully refused a foaming mug of warm milk because it had been “squeezed out of a muddy cow, and mother always gets her milk from a nice clean shop.” Grown-up people may be interested in another source of milk-supply than the cow when they learn that a goat has given half a ton of milk in a year, that goat's milk is much richer than cow's milk, and that in this country it may practically be guaranteed to be free from the bacillus of tuberculosis.*

* The British public is phlegmatic, but about the milk question it shows a callousness which can only come



ALPINE.

"Sedgemere Faith," which yielded a daily average of more than 7½ lbs of milk at the 1907 Dairy Show 189 days after kidding.
Owner, Mr. S. Woodwiss.

Since the rediscovery of the valuable animal which has been dubbed the "poor man's cow," and the formation of the British Goat Society—which has *Vacca pauperis* round its crest—a little more than a quarter of a century ago, a great deal has been done to spread a knowledge of the useful qualities of what Mr. Bryan Hook has called "the most intelligent, most engaging, and most picturesque of domestic cattle." Several dozen nannies are now exhibited for prizes at the Dairy Show. These animals have also a section to themselves at many of the county agricultural shows; and, as a result of careful breeding, good milking strains have been evolved, and a pail record has been made which Mr. Holmes Pegler, writing in 1886, seemed to find it difficult to believe possible.

FREEDOM OF GOAT'S MILK FROM TUBERCULAR BACILLI.—But ignorance as to the

from wilful ignorance. The attitude amounts to fatalism or trusting to luck."—*British Medical Journal*, March 9, 1907.

economic value, the habits, and the improved breeds of the goat is still prevalent. As the "Encyclopædia Britannica" says, "comparatively few goats are kept in England because the advantages of goat-keeping are very imperfectly known." A wider acquaintance with the truth about *vacca pauperis* might lead to such an improvement of the stamina of country and town children that I have sometimes been inclined to think that now that the Utility Poultry Club, the National Poultry Organization Society, and other active agencies are at work in the interests of poultry, a little of the attention which is devoted by public men to the extension of poultry-keeping might be directed to helping forward the cause of the humble milk-giver, from which it seems possible to derive a more substantial return for a smaller expenditure of cash and labour than from any other domesticated creature.

It is not only that the goat produces a relatively large quantity of milk, and excep-

tionally rich milk, but that, as I have said, this milk may be drunk practically without any risk of tubercular infection. How much this means in the case of milk-supplies for infants is obvious. Adults may be able to resist the onslaught of the tubercular bacilli with which so large a proportion of cow's milk is unfortunately charged. Infants, into whose diet larger quantities of milk enter, can hardly hope to come off so well in the struggle.

MILK YIELDS OF GOATS.—Let me briefly establish the facts as to the quantity, quality, and healthy character of goat's milk.

The secretary of the Goat Society has himself supervised the weighing and measuring of the yield of a Swiss goat of Mr. Woodiwiss's. He found the daily average between September 1 and September 4 inclusive to be 10 pounds 5 ounces, or more than a gallon a day. This animal had been in milk for more than five months. Its yield is, of course, more than is customary ; but there are several goats in the country which give 5 gallons a

Telegraph, August 15, 1906) that "goat's milk is worse than skimmed milk, and does not contain sufficient fat and sugar." He was at once answered in the medical and lay press, for the data regarding the respective qualities of goat's and cow's milk are unassailable. So long ago as 1879, Dr. Voelcker, F.R.S., reported on samples of goat's and cow's milk that they contained respectively 7.02 and 3.43 of pure butter and 5.28 and 5.12 of sugar. A later comparative analysis, the cow's milk in this case being from the winner of the champion milking prize at the Dairy Show, resulted as follows :

	Goat's Milk.	Cow's Milk.
Water	83.21	87.56
Butter-fat ..	7.30	3.63
Casein	4.18	} 8.81
Milk-sugar ..	4.10	
Ash	1.21	

Stevenson and Murphy's "Treatise on Hygiene and Public Health" states the per-

contains a smaller proportion of casein than that found in the milk of the cow, such as goat's or ass's milk."

In the *British Medical Journal* of June 23, 1906, Dr. J. L. Stretton writes that at a *crèche* in Alexandria the matron told him that the babies were fed direct from goats—that is, by having their mouths applied to the washed teats, as is done in Cuba, in some parts of France, and by goat-owners in England known to the present writer in the case of their own infants—and, as she said, "the babies are plump and rosy, need no medicine, rarely cry; just drink and sleep." This report on the condition of these particular children was confirmed by Major W. D. Erskine, R.A.M.C., in a later issue of the *Journal*.

The same publication, on May 12, 1906, quotes with approval the following extract from a paper read by Mr. Finley Bell before the New York Academy of Medicine, in which he gave reasons for recommending the more extensive use of goat's milk in the feeding of infants: "Dr. Bell reports two cases of

wasting infants in whom improvement began as soon as they were put upon a mixture of goat's milk and water in place of cow's milk modified in various ways, and suggests that the fat of goat's milk being fluid at a point below the normal temperature of the body may interfere less with gastric secretion, while it is not less digestible by the pancreatic juice. Other advantages which he claims for the goat are: She is more docile, less excitable, not subject to tuberculosis or other disease in this climate. Being browsers rather than grazers, they will thrive when cows would not; and, above all, she is cleanly. Her excrement is solid and her tail short; consequently she is not covered with manure, as is the cow.* It is safe to assert that the

* "Dr. Benham, at Brighton, on February 27, read a description of the usual conditions which prevailed in farms; and horrible in its own way was the callous exclamation of the youth who milked the cows when manure which had fallen into the pail was pointed out to him: 'That ain't nothing; that's only off the cow.'" —*British Medical Journal*, March 9, 1907. "The milk from one dirty farm can contaminate a whole supply, inasmuch as the milk is mixed at factories."—*Ibid*,

production of cow's milk free from manure bacteria is commercially impossible. Not so with the goat; she can be easily washed (tubbed if necessary) and aproned for milking."

"I am quite certain," writes Dr. Lee, of the Children's Hospital, Great Ormond Street, "that if a hundred children were fed on goat's milk, and compared with an equal number of corresponding ages (all circumstances being similar) who were fed on any other milk, except that of their mothers, the goat's-milk children would, in comparison at least with those fed on cow's milk, have an advantage."

AND WHY.—The reason is given by Dr. Voelcker, analyst to the Royal Agricultural Society. He says: "The cream globules in goat's milk are smaller than in cow's milk, and as the milk is more concentrated than cow's milk, the cream globules are contained in a more perfect state of emulsion than in cow's milk; in consequence of which hardly any cream rises to the surface on allowing

goat's milk to stand for twelve hours or longer. It is this quality of goat's milk that explains the fact that it is more easily digested by young children than cow's milk."

A fuller explanation by Dr. Demade, director of the sanatorium at Haelbert, Belgium, which was read at the First Annual Congress for the Improvement of the Goat at Ghent, has just been quoted by Mr. Holmes Pegler in the *Bazaar* (a journal which has given space to the subject of goat-keeping every week for many years). "It is not only," says the doctor, "that among the 300,000 goats of Belgium there is probably not one affected with tuberculosis, while among the cows there might be anything between 50 per cent. and 75 per cent. of animals suffering or showing signs of this disease. Goat's milk being wholesome and beyond suspicion, there is no need to sterilize it. It may be taken raw, still palpitating with those mysterious forces which constitute life, whilst cow's milk, which needs to be boiled, sterilized—killed, in fact—is a congealed, defunct



A NUBIAN GOAT.
Brought from Egypt to the King.



HALF TOGGENBURG.
A first prize winner at Dairy Show. Owner, Mr. T. Langridge.

liquid. D'Escherisch, who has studied comparatively fresh milk and sterilized milk, has shown that milk is not merely a nutritive liquid, but that it is clear that children that are delicate have need of the ferments contained in raw milk, and are quite incapable of digesting milk rendered inert by sterilization."

As a further argument in favour of goat's milk, reference may be made to the researches of Dr. Barbellion of Paris, on the digestibility of different kinds of milk, as reported at the International Congress of Medicine. According to the reports which he has made, it was ascertained that (1) the curd of cow's milk forms a dense, adhering mass, which, by agitation, separates into clots, that are but slightly soluble. The curd of goat's milk, on the other hand, forms into very small, light flakes, which are soft, very friable, and very soluble, like those in the milk of the ass and in human milk ; (2) the curd in both human milk and in that of the goat, after agitation, is precipitated very slowly and incompletely,

while the curd of cow's milk is precipitated very rapidly and very completely; (3) submitted to the action of digestive ferments, human milk and the milks of the ass and the goat were digested completely in twenty hours, whilst the same process applied to cow's milk showed only a very slight advance after sixty hours; (4) the milk of the goat approximates more in its composition and digestibility to human milk than that of any other animal.

The Dr. Demade mentioned has reported a number of cases that have come under his personal observation, in which children who seemed doomed to an early death while being fed on cow's milk grew up strong and healthy by the use of goat's milk.

I have also before me the enthusiastic testimony of ten other medical men writing from personal experience in favour of goat's milk for children.

FACTS ABOUT TUBERCULOSIS.—In saying that the goat is not subject to tuberculosis, Dr. Bell is in agreement with Sir William

Broadbent, who, speaking at Huddersfield in October, 1898, on the prevention of tuberculosis, asked his audience to note that "goats do not suffer from tuberculosis." He is also supported by the testimony of leading English goat-keepers, of every publication concerning goats, and of Professor Nocard, who, some seventeen years since, stated that in the 130,000 goats and kids brought to Paris for slaughter at the shambles of La Villette every spring, the meat inspectors had failed to find a single case of tuberculosis. The data of the Commission for the Investigation of Mediterranean Fever leave no doubt, however, that the goats of Malta—they are not illustrated in this book—are responsible for the dissemination of the affection known as Malta or Mediterranean fever. On the other hand, no one is particularly desirous of importing Maltese goats. An authority writes: "They have never proved to be milkers in this country. In fact, I do not know of a single specimen." Considering the insanitary conditions in which goats are kept in Malta,

the wonder is that they are ever well; I am informed by a resident in the island that they have their freedom to nose about among the garbage of the streets and of the shore, where there is little rise or fall of tide. I have the authority of a distinguished bacteriologist in this country for saying that cases of Malta fever contracted in the United Kingdom "are practically unknown here." He does not believe that any English goats "can be suffering from Malta fever." As to tuberculosis, it is probable that the truth is that, as the Board of Agriculture is advised, "goats are susceptible to tuberculosis, though rarely affected with it."

To conclude, when every admission has been made, we are entitled to believe that, regarded from the sanitary point of view, the generality of goat's milk is superior to the generality of cow's milk.*

* Since this chapter was written, a comprehensive work, "The Common-sense of the Milk Question" (Macmillan) has been published in New York and London. The author says: "All things considered, the neglect of the goat as a milch animal is very much to be deplored. The animal seems to be altogether well fitted to be the wet-nurse of the human infant, much more so than the cow. That an extensive use of its milk in place of that of the cow would lead to a considerable reduction in the enormous mortality from the various forms of tuberculosis which afflict infants is practically certain."



ANGLO-NUBIAN.

"Sedgeniere Sunset." Owner, Mr. S. Woodiwiss.

CHAPTER II

THE GOAT IN RURAL DISTRICTS AND THE SUBURBS

THE NUMBER OF GOATS.—No one knows how many goats there are in England, Wales, and Scotland, because the Board of Agriculture does not see its way to include the goat in its agricultural census. It is difficult to see any reason why the required information could not be obtained from the district enumerators annually employed to calculate crop-yields. The Dublin Board numbers Irish goats, and returns the goat population of Ireland at 299,000. In 1881 the number of goats in seventeen European countries was stated to be over 17,000,000, the percentage to population being fourteen and sixteen in Switzerland and Norway, and a great deal

higher in the Peninsula and Greece. Last year there were estimated to be 300,000 goats in Belgium.

DEARTH OF MILK IN THE COUNTRY.—The great opening for goats in this country is, of course, in the rural districts, in which they could be led about the lanes by children. The dearth of milk in many agricultural labourers' cottages passes belief. The following extracts from letters addressed to me from three different counties during the past year speak for themselves :

From Yorkshire: "To my own knowledge, it is the rarest thing in villages about where I live for the village children ever to get any milk at all. Cows are kept in abundance, but butter making and selling is of more importance than the health and lives of the little children, and so it is impossible to obtain any. Cream is for the butter, and the old milk for the pigs, so the children must go without. I feel convinced that an adequate milk-supply for the poor in country

places could be obtained by the general use of the goat."

From Kent: "Labourers about here have, notwithstanding its being an entirely rural district, the greatest difficulty possible in getting any milk, and the children suffer, I fear, more seriously than the parents appreciate."

From Surrey: "Both in town and country one of our national needs is more milk for the children of all except the wealthier classes. In the country the need results, not chiefly from actual deficiency of milk, nor even from its cost, but from difficulties in the supply of small quantities continually, and often at considerable distances. How can a farmer possibly supply $\frac{1}{2}$ pint of milk daily to a house half a mile away and by itself without loss? He gets 1d., say, for the milk, and sending it by messenger, who travels a mile, costs him perhaps $1\frac{1}{2}$ d. or 2d. It pays far better to send it all in a churn to a distant town, and sell it at $\frac{1}{2}$ d. or even a $\frac{1}{4}$ d. net. The goat offers a solution, and the goat is

ignored. Seventy-five per cent. of the cottage families in the country could keep a goat or two if they would, and, besides nourishing the children better, could find both income and interest in so doing ; but they will not."

The reason is that in so many districts no intelligent person has come forward to demonstrate by personal experiment the value of the "poor man's cow." In parts of the country-side where the goat has found a practical advocate the most encouraging results have followed. This is the work which not only public-spirited land-owners, but rural residents, with little more than a garden behind their houses, might undertake.

MANAGEMENT OF GOATS.—The goat is an accommodating creature. Of course, if it is to be pastured, it needs a large extent of field, for it does not graze soberly, like the cow, but restlessly browses, and needs, therefore, in order to maintain it in perfect health, a variety of herbage.

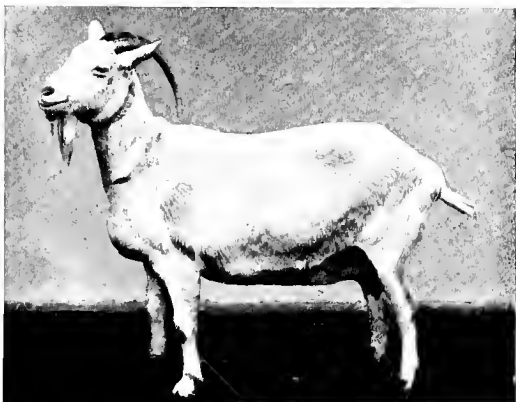
But some of the finest goats in the kingdom

live in the suburbs. The goat, if it be hand fed, does not actually require any more space than a St. Bernard dog. As an experienced goat-keeper once said to the writer: "Any house that is weatherproof and light and sufficiently ventilated will do for successful goat-keeping, if the selection and treatment of the animal are satisfactory." A little yard in front, which may be littered or not, as is preferred, is easily contrived. Goats seem ordinarily to prefer a bench to a soft bed for sleeping on.

CHAPTER III

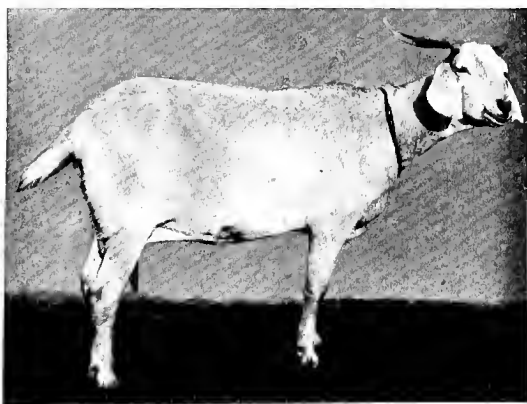
THE PECULIARITIES OF THE GOAT AND HER MILK

BREEDS.—What passes for the English goat—often a mongrel with “Welsh,” that is, Irish, blood in it—is being superseded by animals largely or wholly of foreign ancestry. The favourite breeds have hitherto been Anglo-Nubian and Toggenburg, but something has been heard of the white Saanen. The leading French authority commends the Nubian, the Maltese, the Murcian, and the Alpine varieties, Saanen and Toggenburg being included under Alpine. The heaviest weights of goats hitherto published in this country have been the 170 pounds of a six-year-old Anglo-Nubian nanny, and 195 pounds of a billy of the same breed. I have measured



ENGLISH.

A first prize winner at Dairy Show. Close on a year after kidding she gave 2.7 lbs. of milk in the day. Owner, Mr. J. G. Dawson.



ANGLO-NUBIAN.

A first prize winner at Dairy Show. Also in group of three held by attendant, facing title-page. Owner, Mr. H. E. Hughes.

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an animal which was 37 inches from the ground to the shoulder. Not a few of the best goats are hornless, and have close, soft hair and drooping ears, and might well be kept for their good looks and affectionate disposition alone. The superiority of the foreign goat over the home variety is held to lie in its size, its willingness to breed at more than one period of the year, and its greater and more prolonged milk yield ; but Mr. Holmes Pegler "rather questions this." The increased milk yield in foreign goats has been obtained by the persistent breeding from heavy milkers which has been so long encouraged by the State in Switzerland and elsewhere. M. Crepin's book, "*La Chèvre*," shows what noteworthy developments of goat-keeping have taken place abroad.

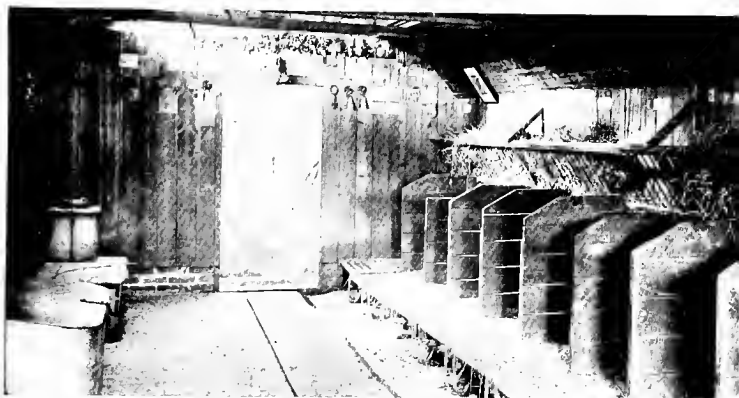
FEEDING.—The peculiarly extensive range of the dietary of the goat makes it a convenient animal to feed, for very little comes amiss to it—from roots, green-stuff, hay, corn, and mashes, to horse-chestnuts, acorns, potatoes, leaves, and fruit-tree prunings. Garden

waste may furnish the bulk of the food of the suburban goat, and wayside browsing is the best method of feeding the cottager's. This mixed feeding by the roadside is, indeed, ideal. Nothing hinders a goat from thriving more than sameness in its diet.

Next to the roadside mixture, the picking here and there while roaming about a field has most to recommend it; but sooner or later the hedges will be seriously damaged.

The third way of feeding is to tether, by means of a strong dog-collar and a chain containing two or three swivels, the chain to be fixed to a ring which works round an iron peg. The best spring hook for either end of the chain is not really a spring hook, but a device kept closed by the chain's weight. But even this is not absolutely trustworthy. It is often prized open through the goat picking up a bit of twig as it moves round its tethering-pin in search of fresh pasture.

But many goats never see a field. Their whole lives are passed healthily enough in their stable and little exercise yard. Con-



MR. BRYAN HOOK'S GOAT HOUSE.

The frames on which the animals stand are removed daily into the open air, the whole being washed down.



A SUBURBAN GOAT HOUSE.

Mr. J. G. Dawson's, Aske's School, New Cross. Note arrangement for preventing the upsetting of pails.

tented goats are often seen in London mews.

Although the goat will eat some things fatal to other animals, warnings against allowing the caprine species to have access to the following have been given from time to time—yew, privet berries, rhododendrons, monkshood, lords and ladies, foxgloves, laburnum pods, and sweetbriar.

Many goat-houses are fitted with racks for feeding. But the animals pull out so much more hay than they eat that, as they never touch what has fallen on the ground, it is a wasteful plan. Mr. A. P. Bossert, who keeps a large herd of goats, has hit on the following method of solving the difficulty. "All we have to do," he says, "is to cut an oblong aperture about 5 inches high and 9 inches wide out of the side of the hut on a level with the goat's neck, and fix a box, say 2 feet 6 inches wide, on the outside, the bottom of the box being at such a level that the goat can only just pick up the last morsels comfortably, and the arrangement is complete.

Experience shows that the box should measure about 9 inches across at the bottom and 15 inches at the top ; thus there is plenty of room for the hay and the goat's head, and at the same time the hay is bound to come within easy reach to the last. It is important, too, that the sides (especially the long side of the box which is in front of the goat) be at least 6 inches higher than the top of the aperture, as the goat, in shaking up her hay to thrash out and then gobble up the seeds, is apt to throw part of the hay out. A good lid to cover up the box and shoot off the rain should be carefully fixed to make a good job of the whole. I have not mentioned it, but the reason for the aperture being oblong and horizontal is of course this—that the goat is obliged to place her head sideways in order to get it out, and then, having again righted it on the outside, does not take the trouble to draw it back until she has finished feeding. In this way nothing is wasted ; all she may possibly leave is the coarsest of the haulms, resembling miniature straw. Mangolds, carrots,

and the like may also be fed in this way, or a tin containing soft food or water may be placed in the box. If it should be thought desirable that the goat's head be kept out whilst the food is being placed in the box, a little sliding door can be added on the outside of the aperture."

SOME OBJECTIONS.—Even when horned, the nanny is a gentle, tractable creature; but there are obvious advantages in the animal being hornless. The popular impression that the nanny has an offensive smell is wrong; but, as Horace's phrase, "the ladies of the unfragrant lord," reminds us, as much cannot be said on behalf of the he-goat. He is an obnoxious animal. The reference in the same Ode to the poet's "goats in bliss, apart from wind and rain and heat," is still a useful hint as to the management of the "poor man's cow." It equally dislikes a hot sun, wet, and a high wind.

An objection to goats is the damage they do, in a very short space of time, in nibbling twigs and barking trees when they happen

to get loose. The offensiveness of the billy is not an objection to goat-keeping, for his attentions are required by the females once a year only ; and no one but the owner of a considerable herd need have a he-goat of his own.

Nor is the milking of the nanny a difficulty. The action is quickly learned.

The alleged unpleasant taste of goat's milk I shall deal with presently.

The complaint that goat's milk curdles more quickly than cow's milk only means that the richer milk of the goat has the defects of its qualities. But the curdling can be almost wholly avoided by scrupulous cleanliness and by care in cooking. The notion that goat's milk will not keep, even when properly treated, is absurd. As a test, I once sent a bottleful by a train service involving three or four changes. The time of the year was April, and the following was the recipient's report : " Thursday.—Milk received on Tuesday evening in excellent condition. This (Thursday) morning what was left was still quite sweet."



SAANEN.

"Broxbourne Venus," owned by Mr. H. E. Hughes. More properly half Saanen, as she had an Anglo-Anglo-Anglo-Nubian mother and pure Saanen father. The handsome child was reared on goat's milk.

When the cream of goat's milk is made into butter, the product, although excellent—it has a Devonshire cream flavour—and superior in nutritious elements to ordinary butter, will not last in the best condition more than a day or two. But as only small quantities of goat's cream are available at a time, the frequent churnings required meet this drawback. The churning may be done in a grocer's sweets bottle by shaking. Goat's cream is white, and the butter is almost as dead a white as lard. A drop of the harmless preparation annatto will, however, produce the conventional yellow, if desired. The yellow of a great deal of cow's butter is obtained by similar artificial help.

MAKING A START WITH GOATS.—In making a start with goats it is perhaps desirable to experiment with an animal procured at a moderate price. But this must be only a preliminary measure, for a good goat costs no more to keep than a bad one, and it is doubtful whether many folk other than cottagers, who need pay for little of the food

for their "cow," can make cheap goats meet their expenses. Whatever goat be bought, it should be bought on a milking warranty. A big udder is not necessarily an indication of high milking powers. It is hardly worth while bothering with a goat not guaranteed to give at kidding 3 pints in the day (taken in two milkings). Of course, the amount of the milk yield means more or less, according as the date when the goat kidded is distant or recent. Her milk-supply gradually falls off until she dries off or is dried off by her owner, preparatory to her next kidding.

To obtain a steady supply of milk it is best to keep two or three animals, as the dairyman does in the case of his cows, and try to arrange for them to kid at different seasons. A properly milked goat will go on giving a small and gradually lessening quantity of milk for two or three years; but it is plainly more economical for her to kid annually, and so provide a fresh supply of milk every year.

KIDS.—A nanny has usually two or three kids at a birth, but one belonging to the present writer has had four and six.

Unless kids possess a pedigree it is best to kill them in the first few minutes of their life, before the mother has familiarized herself with their existence by licking or suckling them. The humane way is to strike them behind the ears with a cudgel. This unpleasant task calls for some resolution, but it may be performed so deftly when the kid is on its feet that it does not cry out. If this plan be followed the nanny does not seem to miss her family.

Kids may be kept till a few weeks old and then eaten, but the mother, if she be deprived of all her offspring after she has become conscious of having something to look after and feed, will not take her bereavement lightly ; and those disposed to be brutal may be warned that a healthy goat is able to bleat more loudly and penetratingly than a sheep.

CHAPTER IV

THE VALUE OF GOATS IN CASH AND MILK

A BALANCE-SHEET.—If kids are of a good milking strain, Mr. H. E. Hughes, a goat-keeper of great experience, argues that they are worth a sovereign at six weeks old. As to “a good-bred goatling giving from 5 to 6 pints a day,” he says it is cheap at £4. “The actual cost of such an animal, at the age of twenty-one months,” he writes to me, “is £3 2s. 6d.; this is reckoning it at 20s. at the age of six weeks, and 6d. a week for its keep until in milk. This animal will produce, say, 3 pints of milk a day for the first twenty-six weeks, 2 pints a day for nine weeks, and 1 pint a day for four weeks; this equals 763 pints at, say, 2d. a pint (cow’s milk price)—total, £6 7s. 2d. Deduct the



ANGLO-NUBIANS.

Arranged to show rate of growth. Unmated nanny with extended ears is daughter of nanny at back, and is 19 months old. Young one in front is 5 months. For an idea of heights compare with yard measure fixed against boarding.



ANGLO-NUBIAN TOGGENBURG.

"Sedgemere Sergius," stud goat belonging to Mr. S. Woodiwiss.

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cost of keep at 6d. a week for thirty-nine weeks, and we have a substantial credit balance of 38s. I have reckoned the value of goat's milk at that of cow's, but to do justice to goat's milk one may safely add 25 per cent. to its value."

Mr. Birkbeck Ravenscroft, who keeps goats on a large scale, once told me that "£3 is a fair price for a goat giving 2 quarts daily."

GOAT-KEEPING ON A SMALL SCALE.—Mr. A. P. Bossert, who has an enormous number of goats, gives the following advice to a cottager: "I should recommend his arrangement so that the goat kids in January or February, and the last year's kid in May or June, when it would be about sixteen months old. The February kid he should retain, also the full-grown goat; the goatling he should sell, also its kid, unless he prefers using it for the table. Thus he has not only a good supply of milk, but he has an early kid ready for next year, is able to sell a goatling, and has one, if not more, kids for the table. The milk he would be getting for his own use

would probably amount to a matter of 600 pints (allowing for the kid's requirements), and that is worth, say, 600 pints at 2d. = £5. To this add the value of the goatling, say at least £2, and balance the value of the odd kids against the trifling amount he may actually have to pay away (feed being practically gratis), and you have a net return of £7. A farm-bailiff could probably keep three or four animals. Suppose we say one goat three years old to kid in February, and one goat one year old not to kid that year. Keep a kid from the better animal, and sell the oldest goat. The result will be, say, £3 10s. for the goat, £5 for milk as above, and the odd kids to balance the small outlay. Net profit, £8 10s. More than three goats a cottager, farm-bailiff, or small farmer will find himself unable to manage."

VALUE OF IRISH GOATS.—In some official particulars published in Ireland regarding the March to November yield of the goats of Wicklow County, supplied by two authorities, it was stated by one informant that an

“exceptionally good goat” would give from 540 to 800 quarts, according to pasture, and a “fairly good goat” from 180 to 266 quarts. The other correspondent mentioned 270 quarts for a “fairly good goat,” and 540 quarts for an “exceptionally good goat.” The first informant said “exceptionally good” goats a month before kidding were worth from 17s. 6d. to 22s. 6d., and “fairly good” goats about 12s. 6d. The other authority gave the reply : 18s. to 21s. and 8s. to 13s. respectively. It will be seen that there is some difference between the two sets of figures. Holiday makers in Ireland might do worse than take an opportunity of witnessing the actual milking of some of the wonderful goats of Wicklow, and of learning on undeniable authority the date of kidding in each case in which the milk yield was exceptional.

OTHER PRICES. — A well-known breeder lately offered me for £5 an Anglo-Nubian which was giving $2\frac{3}{4}$ quarts a day five months after kidding. Obviously, she was worth the money.

Mrs. Earle, who has done something for the cause of the goat, estimates the value of a good Toggenburg at from £7 to £8. Goats have, however, been priced at £12. A pair of goatlings was sold at the Dairy Show some years ago for twenty guineas, and prices up to £60 have since been paid.

FOREIGN BLOOD.—Even if an Irish goat gave 4 quarts of milk a day, it would not necessarily be a superior animal to a foreign or first-cross goat which gave less. It is not milk only, but milk at the right time, that the goat-keeper wants. Ordinarily, our home and often half-wild goats will only breed from September to March. Therefore by the time the winter comes round the keeper of goats of home strains is likely to be short of milk. He has goats, but no milk.

The difficulty is met by using foreign strains. "The effect of domestication, high feeding, and especially of Oriental blood," says Mr. Bryan Hook, "is to induce an inclination to breed at other than the normal season, and it is undoubtedly quite possible by

choosing the breed with this view to obtain kids in any month that may be desired (indeed, I think I may say that I have bred kids in all twelve months of the year*); but

* This experience of Mr. Bryan Hook's is very interesting. Mr. A. P. Bossert has gone the length of asserting that "goats never—or, to be quite correct, practically never—kid during the months of September, October, November, and December." "January," he says, "is very early, yet a fair number may be had in milk in that month." Various suggestions for bringing goats in season, from starvation to high feeding, have been given; but that to which experienced goat-keepers in this country pin most faith is good housing, good feeding, and the presence of a billy—particularly the presence of a billy. Mr. H. S. Holmes Pegler writes: "There is certainly no difficulty in getting goats successfully mated up to March; but from that time till September it is only by having the male running constantly with the female that the desired effect can be obtained. Hence, those goat-owners who possess no male of their own should send their goat to be 'boarded out' with some one who has a young billy, and they then stand a chance of getting what they require. The price charged for the keep of a goat under these conditions, according to the Stud Register rules of the British Goat Society, is 1s. 7d. a week." M. Crepin's hint on getting goats to kid out of the natural season is to "run the nanny with the billy for a month or two after she kids in the spring."

it must be remembered that goats vary very much in their powers of resisting cold, and those that suffer most from this cause will be the first to fail in the milk-supply. In the exceptionally severe winter of 1894-95 I had three Spanish goats and one English that had kidded in November, and milked well until the severe weather set in, and then, being more affected by the cold than my Swiss goats, they gave less milk, though the Swiss (Toggenburg and Appenzell) had been eight months longer in milk, having been kidded in the previous April, and being due to kid again in the April following. Indeed, these animals would undoubtedly milk the whole year round until their kids were born were such treatment advisable."

But, of course, we are talking of goats for which a fair sum must be paid. The goat-keeper must set the advantages possessed by the better-class goats against their higher cost.

COST OF KEEP.—As to the cost of maintaining goats, many people, of course, never take

the trouble to calculate the expenditure. The author of the delightful "Pot Pourri from a Surrey Garden," already quoted, writes to me : " My goats live in my field with the cows, and we give them leaves, etc., from the garden, and they have a little corn every evening. I have no house for them. They go in with the cows." Mr. Birkbeck Ravenscroft has not worked out how much a head his goats cost him, and Mr. Bryan Hook keeps no separate goat-food account either ; but when he took his goats, with his family, to the seaside, the milk-producers cost 9d. a week.

Prospective goat-keepers will find the account Mr. Hook gives in his book of the mode of feeding these animals instructive. " The two goats," he says, " were allowed the run of a little yard, with shelter from the wet. Their breakfast, given while they were milked [mine are allowed during the operation to lick rock-salt, of which goats are very fond], consisted of a good $\frac{1}{2}$ -pint of oats or scalded maize, with a double handful of coarse bran, to which was added any available kitchen

refuse. At midday they received an armful of weeds cut from a disused piece of garden ground—some thistle, comfrey, dandelions, cleavers, and coarse grass. At about six o'clock they were allowed to follow some of our party to the beach, and range the neighbouring waste land for grass, thistles, bramble, horned poppy, and other seaside fodder, following us home at dusk. Their supper consisted, like their breakfast, of corn and bran. One of these goats was yielding after six weeks of this life exactly 6 pounds 14 ounces of milk, or nearly $5\frac{3}{4}$ pints, daily. Thus it will be seen that this one animal yielded produce to the value of £2 7s. (cow's milk price) during our stay of seven weeks, the total expense for food, hay, corn, and bran being 5s. 4d."

VIEWS OF AN OWNER OF TOGGENBURGS.—The following is an extract from an interesting note with which I was favoured by Mr. Paul Thomas, who, before going abroad to live, kept goats for a quarter of a century in this country: "I generally keep ten or twelve



ANGLO-NUBIAN.

A first prize winner, as a kid, at Dairy Show. Also in group of three held by attendant, facing title-page. Owner, Mr. H. E. Hughes.



TYPICAL TOGGENBURG.

Won many prizes. Gave 5 pints daily for five months after first kidding. One of the best ever seen in this country.
Owner, Mr. Paul Thomas.

[To face p. 45.

goats, sometimes more. The cost of a goat is about 3d. a day in winter, but in summer-time when grass is plentiful you can keep a goat for a penny daily. I let my goats pasture in a large meadow all day, and they are stalled for the night. In my case I consider that the sale of the kids and the stud fees pay for the hay, corn, and bran, and that the milk is the profit. A herd of common goats would not pay, but the Toggenburg goats, a hornless variety of the Canton St. Gall, in Switzerland, are the only goats I keep. I enclose you a photograph of a remarkable goat, named Galatea [*vide* illustration], who took many prizes. This is a pure-bred Toggenburg. After her first kidding her yield was 8 pints daily, and she kept up this yield for five months, and stayed in milk till her next kidding."

IDIOSYNCRASIES.—In wet weather goats necessarily cost more to keep than in fine. It is also obvious they are likely to be more cheaply kept in summer than in winter. Goats not in profit need less, of course, than

goats which are being milked or are about to kid—though an animal about to kid should not be too fat. Hay bulks largest in the winter dietary.

Whether hand-fed or field-fed, goats, as already stated, must have variety in their food, or they will fail to yield a satisfactory return, and will eventually go off their appetite, lose flesh, and if not provided with the change of diet they require, become dangerously ill. A goat will never satisfy itself with one kind of food, even the best clover hay or the finest lawn grass. When it is loose it never crops steadily like a cow, but takes a bite here and a bite there, and is ever moving on.

Again, the careful keeper of goats will notice that every one of his animals has its own particular fancy in food. My black goat in the picture is so fond of stale bread that she will stand on her hind-legs begging for it until she has eaten the best part of a loaf; but none of my other animals specially cares for this kind of food. Goats also differ in

their liking for sloppy food—a great milk-producer—some liking it immensely, and others having to be coaxed to consume it. Whatever food is provided must be clean and in a clean pail, and it must be given in such a way that the goats cannot put their feet into it. Immediately hay or grass falls underfoot, goats will refuse to eat it, even if rather hungry. If they are given the chance, no animals eclipse goats as wasters of food.

CHAPTER V

THE OTHER SIDE OF THE PICTURE

THE TRUTH ABOUT DISEASE.—It goes without saying that goat-keeping, like everything else, requires attention to be successful. If the interest which the would-be purchaser of goats takes in this breed of milk-producers is not likely to last beyond the period when they are a novelty on his premises or he can attend to them himself, he had better leave goats alone, and go on taking the risks of what is delivered at his door under the name of cow's milk.

I should not be frank if I did not mention that some correspondents of mine have given up goat-keeping "owing to losses by disease." But I have no information as to what the disease was. (Of course, it was not tubercu-



GOATS BARKING WOOD.

Two Anglo-Nubians and two English.

losis.) In-bred, ill-housed, badly fed and uncared-for stock is always liable to disease, and *vacca pauperis*, marvellously hardy though it is, is no exception. To keep goats on wet ground, or in too large numbers for the space at the owner's disposal, or to allow diarrhœa to go on without checking the cause of it, or to neglect grooming and cleanliness, or to shut out fresh air, is, as might surely be anticipated, to court disaster. But why goats should ever have been expected to remain in good condition in circumstances which would be fatal to other domesticated animals is puzzling. The man who has a few goats of healthy parentage, and shows simple common sense in his housing, yarding, and feeding arrangements, need fear few losses. I have never cosseted my goats, but I have had no ailments which a timely bran-mash or a change of food did not get rid of. I know nothing of "a disease peculiar to goats," but some of my correspondents refer to it.

As to insect pests on the skin, it is easy to use Mr. Holmes Pegler's remedies—a table-

spoonful of izal in a pint of warm water, or a wineglassful of spirits of tar to a quart of tobacco-water.

A TALE OF TWELVE.—One of the most amusing letters about goat-keeping I ever received was the following, from Mr. R. E. Nicholas, of Bitterne Park, Hants :

“ My experience is limited to about a dozen goats, and only half of these well bred, the balance being just common or garden goats, as my fruit-trees bear witness. Of these I cannot conscientiously say anything good, excepting, perhaps, that they had excellent appetites, while the principle of *de mortuis*, imbibed with my earliest Latin grammar, precludes my speaking my mind freely. They died in various and peculiar ways—two, for instance, falling victims to a surfeit of wilted laurel-clippings, though, incidentally, they all ate with apparent impunity and with obvious relish fresh foliage of both laurel and rhododendron, the latter of which is, I believe, generally regarded as toxic to the species. One big Toggenburg goat conceived a violent

and seemingly unjustifiable antipathy to a particular tree-stump—to ordinary vision it seemed a most inoffensive stump of its kind—and butted its skull in on it. Another ate the pocket of my coat, with its assorted contents, including a rubber pouch full of shag tobacco and the middle sheets of a *Daily Mail*. Yet another fell sick and was doctored by a friend who is by way of being an expert in goat management. He administered half a pint of an exceptionally vile brand of castor-oil by the aid of a teapot, and I thought at the time that his treatment seemed something drastic. Still another argued some point of interest with my big hounds, and evidently came off second best in the argument, as we found her a day or two later carefully covered over with a sort of barrow-mound of earth and rubbish under one of the open dog-shelters—argument had ceased to interest her. In brief, they all died saving one, and relative to this creature I went to see a goat specialist in the neighbourhood. To him I placed the matter in its best light : dilated on the size of

the goat, its length of lop ears, and pedigree ; told him it cost me £2, which was fact ; appealed to his better nature by the statement that the goat was lonesome by itself, and that I would not think of letting it go at all if only I had companions for it, which was fiction. He was a taciturn sort of man, and he said, ' Give you half a crown.' It was not what I expected, but I did not bargain. I just said good and quick : ' Give me the half-crown,' which sum I later profitably invested in conveying the creature to its new owner. I am really very sorry that I cannot be of assistance to you. If it had only been about pigs, now. There's a deal of good company about a pig, besides which you can eat him up—even to the tail."

THE NOISE OF GOATS.—The only drawback to the keeping of goats that I can think of which has not been mentioned already is their power of making themselves a nuisance when dissatisfied with their lot in life. Goats are extremely intelligent animals, and if after being taken from their stable to a field after

breakfast every morning for months the practice is stopped for no reason of bad weather, cold, or shortness of grass that the animals can appreciate, they will probably lift up their raucous voices in protest. Similarly, they will remind the careless attendant if he or she lets milking or meal time go past. At the periods at which the nanny desires the society of the billy she will also give vocal expression to her feelings. A goat is a creature of independent mind, which will not endure with resignation what it considers injustice. I have even known a nanny begin to "blare" because a stable companion got upon the milking bench and thrust its head under the "guillotine" out of its turn. But the noise made by well-cared-for goats is not greater than that emitted by a properly-managed dog, and few men or women who have once kept goats on their premises fail to become attached to the species.

PARTURITION.—It should be added that during parturition goats seldom require assistance. I have never had any trouble. On

one occasion a nanny kidded in the open. I give a warm oatmeal and bran drink after all is over. If the afterbirth is not taken away, the nanny will eat it. The time of gestation is about 150 days. The signs of approaching parturition are a certain uneasiness in the nanny's demeanour, a swelling of the vulva, and an excretion of mucus. A few days before the kids are born the goat's body seems to drop a little from the haunches. A healthy nanny occupies a standing position when having her kids. The little creatures rise to their feet almost at once.

Kids are exceedingly precocious. On the day of birth they will nuzzle their owner's legs, and on the second be playing with one another. If kids can be kept, great pleasure will be obtained from their joyous ways and affectionate disposition.

BREEDING.—It is the general opinion that a goatling should not be sent to the male goat till she is eighteen months old. But in Germany it is thought that a development of the mammary glands takes place when kidding

is allowed at a year old. The sign of a nanny wishing to go to the billy is a wagging of the tail, uneasiness, and a swelling of the vulva. Œstrum lasts only three days, so advantage should be taken of it at once. The nanny will not take service if the "heat" has passed. Service is almost invariably preceded by a butting match, in which no harm is done. To make sure, it is well for the nanny to be served three times.

In buying a nanny in kid it is well to have a guarantee, as goats often simulate a condition which does not really exist. At eight weeks the body of the kid can be felt by placing the hand on the goat's abdomen. A goat in kid can stand a good deal of butting by her stable companions, but obviously the less she has of this the better.

CHAPTER VI

MORE GOAT-KEEPERS' EXPERIENCES

THE VARIETIES OF GOATS KEPT.—I now propose to supplement the information brought together in the preceding chapters with a digest of the data which, as I stated in the Introduction, has been kindly supplied to me by a number of representative goat-keepers in this country.

The following list of my correspondents will be of interest as showing to a certain extent the kind of goats preferred by experienced goat-keepers in Great Britain :

	<i>Years.</i>	<i>Keeps.</i>
Goat-keeper for	35	Anglo-Nubians.
„ „	30	Anglo-Nubians (50).
„ „	20	Toggenburg cross (3).
„ „	20	Anglo-Nubian-Toggenburg (3).
„ „	19	Chitral-Cashmere (19).



THE ONLY PURE-BRED MALE SAANEN IN ENGLAND.

Broxbourne Adam, owned by Mr. H. E. Hughes, one of whose Goat Houses is seen in the background.

	<i>Years.</i>	<i>Keeps</i>
Goat-keeper for	15	Toggenburg and Toggenburg-English.
"	" 15	Almost all Toggenburgs (70).
"	" 12	English - Anglo - Nubian, Anglo-Toggenburg, Saanen, Anglo-Saanen, Anglo-Nubian-Saanen, Anglo-Toggenburg-Anglo-Chitral, and Anglo-Nubian-Chitral (38).*
"	" 11	Anglo-Nubian and Toggenburg (11).
"	" 10	English and Toggenburg.
"	" 9	English and Toggenburg.
"	" 8	Anglo Nubian, Toggenburg, crosses, and mountain goats (30).
"	" 8	Toggenburg, English, and Irish and Toggenburg crosses (8).
"	" 7	Toggenburg (12).
"	" 7	Toggenburgs and their crosses (8).
"	" 6½	Toggenburg (2).
"	" 5	English, Toggenburg and Nubian, and crosses (8).
"	" 3	English and Anglo-Nubian (8).
"	" 3	Toggenburg, Dutch, Anglo-Nubian, and crosses (12).
"	" 3	Anglo-Nubian, Toggenburg and Welsh, and crosses (15).
"	" many	Toggenburg and Irish (4).
"	" 2½	Anglo-Nubian and English (6).
"	" 2	Anglo-Nubian, English, and Toggenburg (10).

* The report of the owner of this large selection of goats on the varieties he likes best is useful. " I am now satisfied that Saanens or Toggenburgs are the best milkers. Saanens may turn out to be the best [They are

DIETARIES.—Mr. Birkbeck Ravenscroft, the owner of fifty goats, sends them to the fields in charge of a boy. The animals walk about luxuriously “in clover or sainfoin up to their bellies.” In the autumn the rations are as follows: 7 a.m., bran and a few oats; 8 a.m., a little hay; 9.30 a.m., swedes or mangolds and bran; 12 noon, cabbages; 4 p.m., swedes or mangolds and bran; 5 p.m., racks filled with hay.

Mr. A. P. Bossert, who has seventy animals, adopts this system: Middle of May to middle of August, grass and hedge-stuff; during winter months, hay and roots at 8 a.m.; cabbage, acorns, oats at 12 noon; bran-mash (quart to each full-grown animal), with a little crushed oats (barley must be added for a change), hay and roots, 8 p.m. General principle: Feed liberally, and give as much variety as possible.

Mr. H. E. Hughes, who devotes a great deal

thought highly of on a Paris doctor's goat-farm.—H.C.], but this has to be proved. The milk is richer than the Toggenburg's. Half-breeds of either seem to be equally good as milkers (see p. 97).

of time to his thirty-eight goats, says : Summer—little else than grass is needed, but a little corn is desirable ; winter—morning, coarse middlings and bran, or oats, hay, and water ; midday, hay ; evening, bran and oats, mangolds and bran, the green food available, water, hay, and salt.

GRAZING.—Lady Dunleath reports that in summer her goats go out as they like. In the winter they are “let out in the paddock for a few hours each day, and have a feed of oats, turnips, hay, and sometimes a little cake.”

The Duchess of Hamilton and Brandon gives in winter “a mash once a day ; hay, oats, and bran at the other meals.” In the case of the goats of the Hon. Iris Mitford, whose goats are loaned to cottagers, it is expected that they shall be given grass and garden waste in the summer, and hay and two feeds of corn in the winter.”

The Hon. Rose Hubbard gives grass only in the summer, “with a handful of oats to keep them quiet at milking-time.” In the autumn and winter the goats get what they

can find when out of doors during the finest part of the day, "supplemented by hay, carrots, mangolds, and any green-stuff from the garden, crushed oats, and occasionally a small quantity of oil cake."

This selection of dietaries is perhaps sufficient to indicate the kind of food on which goats will thrive. Several correspondents keeping a few goats manage, by the utilization of waste, to feed their animals at very small cost. Some of the goat-keepers whose experience is before me tether their goats; others allow them to roam about; one or two enclose them in hurdles; those who live in the suburbs of towns keep their pets confined to a small yard or an enclosure at the bottom of a garden.

Mr. Buchanan lets out his goats "more for the pleasure of looking at them than their own benefit," and has never had any disease.

Mr. C. J. H. Tower has his goats (white Cashmere) running wild in a park with deer.

Mr. Henry Stephens never houses his "summer or winter."

This is also Lady Warwick's practice.

In no case reported upon are the animals kept under cover longer than necessary ; and the value of exercise and the variety of food is always emphasized.

TETHERING AND MILKING.—When goats are taken out to be tethered in the field, their position must be changed several times a day, according to the quality of the grass.

For milking, it is convenient to let the goats stand on a low bench, with their heads in a sort of guillotine. The animals soon learn to jump up on the bench and put their heads through the opening as the contrivance is raised. A goat may advantageously be given part of its food while it is being milked in this way, or a box containing a piece of rock-salt may be swung within reach of the nanny's head.

GOAT-HOUSES.—It is seldom necessary to build a house for goats, though Mr. Bryan Hook and several correspondents, including most of those named, have had buildings specially erected. A stall 4 feet square is suffi-

cient to accommodate two goats side by side, but, of course, the apartment in which the stall stands must be airy. To avoid the damage which would be caused by the goats escaping, it is well to have a double hook on the gate of their yard, or double gates.

Animals which are not often on rough ground need to have their hoofs pared from time to time, but this is not a difficult operation. The goat operated on can be held down on its side by an assistant. Care should be taken not to cut into the quick.

COST OF FEEDING.—Averaging the figures of a number of our correspondents, I find the cost of feeding a goat in the country put at 8½d. a week, and in the suburbs at 1s. 9d. Mr. Hughes reports 6d. and 2s. Only one correspondent who gives figures goes beyond 1s. for country feeding, and two say 3d. and 4d. As to feeding by grazing alone, the secretary of the Goat Society writes: "From April to the end of August or early September a goat can be, during fine weather, almost

wholly maintained in milk by grazing and browsing—that is, with grass, leaves, and vegetable refuse—without resorting to corn and hay.”

BEST MILKERS.—The same authority informs us that the breeds which furnish the best milkers are “the Alpine, Toggenburg, and Maltese, and the Anglo-Nubian in some strains.” “As the Anglo-Nubian is a made-up breed, like the Orpington fowl,” he writes, “much depends on the particular strain. With the Alpine, Toggenburg, and Maltese—these breeds coming from countries where breeding for milk has been carried on for centuries—the milking quality is more fixed in the blood and transmissible.”

While many of our other correspondents draw particular attention to the Toggenburg, and Mr. Hughes finds the Saanen promising, there seems to be a consensus of opinion that milking qualities in goats, like laying powers in hens, are a matter of strain. “Any breed,” says one correspondent, “can be made milkers by selection and proper attention”; and the

Rev. E. P. Boys-Smith writes that "there is no natural breed of milkers."

MILK YIELDS.—With regard to the quantity of milk that a good goat should give after her second kidding—no goat reaches her maximum at her first kidding—several correspondents say "two quarts at least," this quantity gradually dropping after a few months.

But some of our authorities report higher yields.

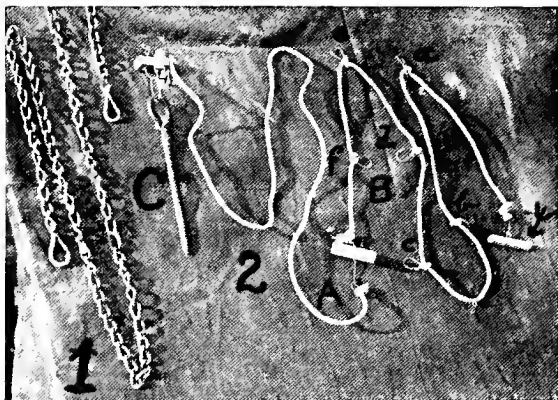
Mr. William Smith has goats that give 6 pints at kidding and 3 pints at ten months.

5½ pints Mr. Bossert considers good.

Mrs. Rushton Ablett possesses a goat yielding about 3 pints daily after being in milk sixteen months.

Mr. Ravenscroft had an animal which, 556 days after kidding, was still giving a daily quart.

It is better, however, to reckon milk yields by weight rather than by measure. The scales do not give credit for froth. The following table is summarized from the statistics of the milking competition for goats at the



TETHERING APPARATUS.

1.—Ordinary spring hook and swivel tethering chain ; 2.—Extending tether, devised by Mr. A. P. Bossert, Caldecote, Cambridge. (A), the tether ; (B), extension rope attached to (A) by wooden toggle ; (C), peg to be driven in ground. The length of the tether can be increased by inserting the toggle in the loops *a, b, c, d, e, f*, as may be desired.



MISCHIEF DONE BY GOATS.

The pieces of barked wood this side of the wire netting are all that remains of a hedge.

7

4

Dairy Show, to be found in the *Journal of the British Dairy-Farmers' Association* for 1906. The table gives the average yields in pounds and tenths of a pound per day.

Name of Goat.	Days since Kidding.	Weight of Milk given.	
		Morning.	Evening.
Sedgemere Faith ..	174	3·80	3·80
„ Melba ..	195	1·75	1·50
„ Capella	196	1·75	1·55
„ Sunbeam	257	1·70	1·55
„ Louise ..	228	2·00	1·90
Montbretia ..	193	1·10	1·40
She	209	1·15	1·35
Diamond Queen II.	245	2·00	1·80

The average percentage of fat in the milk of one of these goats was as high as 6·20. For the figures in the 1908 *Journal*, see Appendix.

The value of a goat is calculated by several correspondents as at least a sovereign for every 2 pints given at the second kidding up to 2 quarts. Animals yielding over 2 quarts are priced on a higher scale. The producer of 4 quarts would readily command from £10 to double that sum. A goat in milk is obvi-

ously more valuable than one which is dry. A higher price is also asked for hornless and pure-bred goats.

MONEY VALUE OF THE MILK.—As goat's milk is ordinarily so much richer than cow's milk, it is fair to set down its value to the goat's owner as greater than the 3d. or 4d. a quart at which cow's milk is bought. It is worth anything between 5d. and 7d. a quart. Mr. Bryan Hook, who has established a goat dairy near Farnham, vends his milk at 4d. per pint.

With regard to kids, if they are kept for stock, they will have drunk 15s. worth of milk by the time they are able to leave their mothers ; so, unless they can be sold for more than that sum, they will return no profit on food and trouble. At a few weeks old kids are sometimes eaten ; but, as the easier and more humane way of disposing of them is to kill all but pedigree stock at birth, it is hardly worth while, in constructing a balance-sheet, to put down any receipts except from the milk.

One of the most reasonable balance-sheets

I have seen made out by a goat-keeper was the following :*

EXPENSES.

	£	s.	d.
To yearly loss on a three-years-old goat, bought for £3 10s., and sold locally in about two years' time at £1 10s. (reckoning interest) ..	1	2	0
„ food, stud fee (1s.), and incidentals	2	12	0
„ contribution in respect of labour and housing	1	0	0
	£4	14	0

REVENUE.

To milk—say $1\frac{1}{2}$ quarts daily for six months, 1 quart for three months, $\frac{1}{2}$ quart for one month, or 379 quarts for ten months at 5d. ..	£7	17	11
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The milk yield of goats is supposed to fall off from the sixth to the eighth, and in some cases the tenth year. At ten years old some goats known to me are giving 3 pints daily.

* Mr. Holmes Pegler's comment on these figures was : " This seems a decidedly reasonable account as far as the milk return for the year is concerned, as it is the yield of quite an ordinary milker, and the milk is well worth 5d. per quart ; but the expenses, other than depreciation of value of the goat, seem to me to be somewhat under-estimated."

The best way to maintain the yield is not only to feed well—giving as much sloppy food as possible—but to milk well.

The Duchess of Hamilton writes : “ If you get a really good goat, she will milk the whole year. I have had one which gave milk for two years on end, and then still yielded a pint, and was with difficulty dried off.”

In buying goats it is well, as has been stated, to begin with animals which are not too costly. As soon, however, as goat-keeping is understood, nannies of the best milking strain will be found a profitable investment.

GOAT'S MILK FOR CHILDREN.—Nearly all my correspondents have personal experience of the great value of goat's milk to children. “ All my children,” writes the Duchess of Hamilton, “ have had goat's milk, and have done very well on it.”

Lady Dunleath says : “ I give all mine away to the village for infants. This is one of my reasons for keeping goats.”

THE TASTE OF THE MILK.—With regard to

the common belief that goat's milk has a peculiar taste, I have in my own experience traced it to lack of cleanliness in dealing with the milk, or to something with a strong taste having been fed to the goat ; but it is said to occur when an animal is in some way out of health. The evidence of three lady correspondents—the Duchess of Hamilton, the Hon. Rose Hubbard, and the Hon. Iris Mitford—is all to the effect that with cleanliness and proper feeding there is no objectionable taste in goat's milk. The peculiar taste of some goat's milk in South Africa and Egypt is due to dirty vessels. Personally, I have found that people who taste clean goat's milk for the first time are unable to distinguish it from cow's milk except by its greater richness and sweetness.

CARE OF THE GOAT.—The replies to my question as to the personal experience of correspondents respecting disease among goats confirm the general belief as to the excellent health enjoyed by goats when properly cared for and not in-bred. Variety

in food, pure water, adequate exercise, unlimited fresh air, good milking, the brushing of the coat, and kind treatment are, along with keeping the animals on reasonably dry ground, the chief means of maintaining goats in good condition.

For further details on the points touched on in this chapter, see Appendix.

CHAPTER VII

GOAT'S MILK AND MEDICAL RESPONSIBILITY

GOAT-FARMING.—Various schemes of goat-farming have been outlined by enthusiasts, but the difficulty of getting a sufficient tract of suitable land, at once cheap, properly enclosed, and within convenient distance of London, and the limited demand which, after all, exists for goat's milk, are obviously serious obstacles in the way to commercial success.

Although roast kid may be had at a West End restaurant, there is no market for kid's flesh, such as exists in Paris. As to goat's milk, the demand has practically to be created. In answer to inquiries made of three of the leading London dairy companies, one replied that "We gave up keeping goats some years ago"; the second that "We have no demand for goat's milk, or, at all events, on very rare

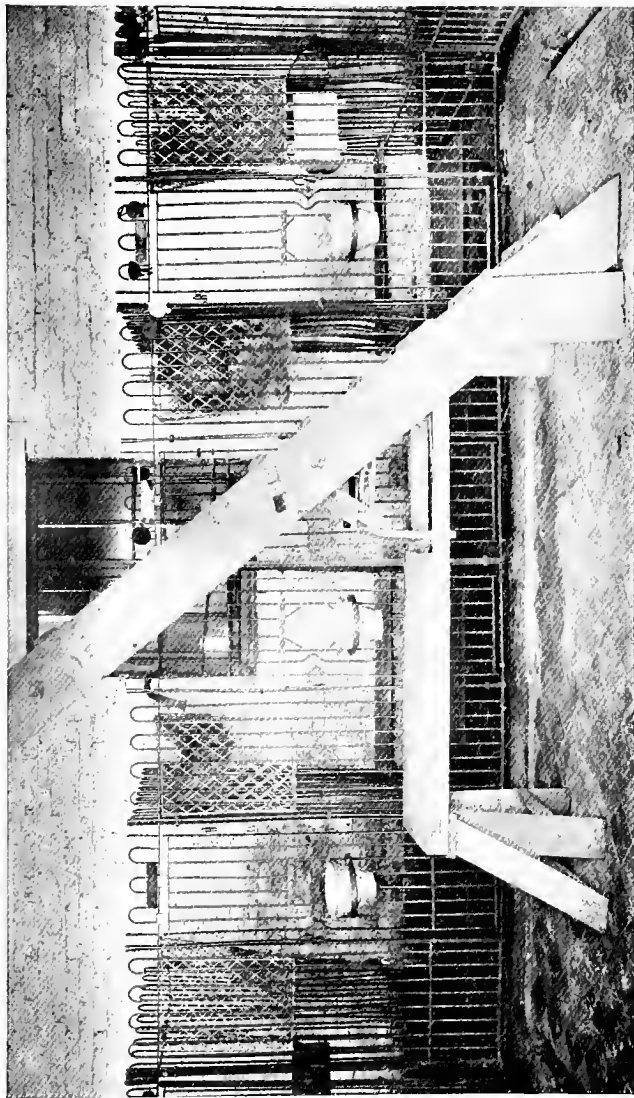
occasions indeed"; and the third that "The demand is so small that it would not pay us to purchase a regular supply even in the smallest quantity. We received only one inquiry between April, 1904, and August, 1905."

SUPERIOR DIGESTIBILITY AND PALATABILITY.—When it is borne in mind that not only the number of goats kept in this country, but their milking powers are steadily increasing, this report of the London dairy companies shows how little has been done by the medical profession to popularize the use of a milk which is necessary no less to the townsman's than the countryman's child. It is a milk which is not only more digestible than the cow's, as Dr. Voelcker has shown, but more palatable, because it may be drunk without boiling or sterilizing. This is due to the fact that it is the product of an animal which invariably refuses dirty food, which is cleaner in her person than the cow, and, what is of the first importance, suffers very rarely from tuberculosis.

CONSUMPTION AND COW'S MILK.—Perhaps the Report of the Royal Commission on the connexion between bovine tuberculosis and "consumption," which sets forth so plainly the dangers to which consumers of cow's milk are exposed, may do something to advance the claims of the humble milk-giver, concerning the merits and management of which I have endeavoured to collect some trustworthy particulars. The Commissioners have no doubt whatever that "a very considerable amount of disease and loss of life, especially among the young, must be attributed to the consumption of cow's milk containing tubercle bacilli."

Happily, at least one medical paper—the *British Medical Journal* (March 9, 1907)—has spoken plainly concerning the duty of physicians in the light of the findings of the Commission. "It may be said," it says, "that it is not within the province of a medical man to hunt out shops supplying healthy milk. We believe that, if the private practitioner will look into the question, he will be disposed to

agree that the new facts brought to light in recent years have imposed a new duty upon him also. Milk has long been an important element in the treatment of many cases, and when a patient is no longer able to take an ordinary mixed diet, he is still very often put upon milk. Now, while a patient who is not very ill may be able to resist disease-producing microbes in milk, the powers of resistance of a patient weakened by a serious illness are reduced, and the risks become greater. If, then, a milk diet is an important part of the treatment of many cases, both acute and chronic, the freedom of the milk from contaminations capable of producing injurious effects even in health becomes as important as the purity of drugs or the sterilization of instruments."



ONE OF MR. H. E. HUGHES' EARLIER GOAT HOUSES.

The bench below the stair is for milking. The stalls have wooden frames on the floors.

CHAPTER VIII

A WORD WITH THE BOARD OF AGRICULTURE

THE PROHIBITION OF THE IMPORTATION OF FOREIGN GOATS. — The advance of goat-keeping on common-sense lines is hindered in another way than by ignorance, on the part of the medical profession and the public, of the good qualities of the milk of the goat and the ease and economy with which she may be kept.

It is not the only grievance of intelligent goat-keepers against the Board of Agriculture that it makes no effort to include goats in its annual census, and does nothing, even by means of an official leaflet, to encourage the breeders of the best, as is done on the Continent.

Although the goat stock of the kingdom is suffering from in-breeding to a deplorable extent, as an examination of the Herd-Book shows, the Board will not permit the importation of new blood *even under quarantine restrictions*. An Assistant Secretary has been good enough to state to me, as follows, the case for refusing admission :

“SIR,—I have laid before the Board of Agriculture and Fisheries your further letter of the 26th ult., on the subject of the landing of goats in Great Britain from abroad, and in reply I am to point out that, inasmuch as the landing in this country of goats brought from the continent of Europe is attended with considerable risk of the introduction of foot-and-mouth disease, and might easily have consequences far outweighing any economic advantages to be derived from the importation of this class of animal, such importation can be sanctioned only on rare occasions and in very exceptional circumstances. The permission granted to the British Goat Society

in respect of the goats which were landed at Southampton in February of last year was intended to be quite exceptional; and the Board intimated to that Society that it was unlikely that the permission would be repeated. In these circumstances the Board have decided not to authorize any further importation at the present time."

WHAT GOAT-KEEPERS THINK ABOUT IT.—I shall content myself with appending some of my correspondents' criticisms on the attitude assumed by the Board:

"Toggenburg and Mohair goats are woefully inbred. I am obliged to give up Mohair goats for this reason. As quarantine is amply protective, the Board's action is an oppressive absurdity."

"The number of goats which it is desired to import could only be small, as the expense would be considerable."

"An acclimatized good milking goat should be a priceless boon."

"The Board ought certainly to license the

importation of stock goats, under proper conditions, by the British Goat Society and the Toggenburg Club, in order to recruit breeds like the Toggenburg and the Saanen."

"Unless a few animals are imported shortly, I do not know where breeders are to find unrelated blood. To in-breed further or to use inferior males means failure to goat-breeding in this country."

"Most absurd. England is standing in its own light in not fostering goat-keeping. In Switzerland and Germany goat-keeping is supported by the State because the importance of giving children a good start in life is recognized, and because it is known that goat-keeping encourages thrift."

It seems to me that Lord Carrington and Sir Edward Strachey have been interrogated in Parliament on matters of less real importance to the community than the action of the Board of Agriculture in refusing quarantine licences for the importation of less than a score of stock goats in order to increase the

stamina and commercial value of the "poor man's cow."

It is interesting to contrast with the attitude of the Board the action of the French and American Departments of Agriculture. M. Crépin, managing director of a well-known goat establishment near Paris, is stated to have obtained facilities from the French Bureau d'Agriculture for importing into France goats "from almost any part of the world." A professor on the staff of the Washington Department lately came to Europe, and took back with him to the United States no fewer than sixty-eight goats.

APPENDIX

REPLIES OF LEADING GOAT-KEEPERS TO TWENTY-FOUR QUESTIONS

ON pages 82-3 are the questions addressed to leading goat-keepers in the circular to which reference has been made. These questions are numbered. To save space, the replies are preceded by the numbers attached to the questions, instead of by the questions themselves. The reader who wishes to consult the replies on any particular detail of goat-management can find from the list below the number of the question dealing with the matter on which he seeks information, and will then be able rapidly to turn over the succeeding pages on which the various goat-owners discuss it in turn. Owing to the small size of the pages of this book, it was not pos-

sible to arrange the replies in any form of table except by printing it on a large inset, a thing which experience shows is soon torn when often consulted.

LIST OF QUESTIONS ASKED

1.—Address.

2.—Have you kept goats in town or country ?

3.—How many goats have you now, and of what BREEDS ?

Of what other breeds have you experience ?

4.—Please give particulars of HOUSING, TETHERING, and GENERAL MANAGEMENT as fully as possible.

5.—Please give full particulars of FEEDING according to the time of the year.

6.—What do you reckon the weekly COST OF FEEDING a goat is—

(a) In the country ;

(b) In the suburbs ?

7.—To what extent can goats in milk be maintained by GRAZING alone ?

8.—Which breed do you consider furnishes the BEST MILKERS ? Or do you think milking powers are more a matter of strain and breeding for milk than breed ?

9.—MILK YIELD.—How much do you think a profitable goat should give—

(a) At her second kidding ; and

(b) During the ten months following ?

10.—PRICES OF GOATS.—What is such a goat worth ?

11.—What do you regard as the INDICATIONS OF A GOOD MILKER ?

12.—MATING.—At what age do you think a nanny should be put to the billy ?

Have you any hints on obtaining a supply of milk all the year round ?

13.—At what age do you think the total yield of MILK BEGINS TO FALL AWAY ?

14.—PRICES OF KIDS.—What price are you able to get—

(a) For goat milk ;

(b) For kids sold for killing ;

(c) For kids sold for stock as soon as able to leave the mother ?

15.—Do you prefer HORNED OR HORNLESS goats ? If so, please state reason for preference.

16.—Do you find GOAT'S MILK BETTER THAN COW'S MILK for feeding infants ?

17.—Do you find that goat's milk has a FLAVOUR which causes some people to dislike it ?

18.—Have you any views on the subject of FEEDING FOR MILK ?

19.—What advice does your experience lead you to offer—

(a) One in the country ;

(b) One in the suburbs, STARTING GOAT-KEEPING ?

20.—Have you any experience of DISEASE in goats ? If so, please give particulars.

21.—What plants or other FOOD do you consider HARMFUL TO GOATS ?

22.—Have you any experience which you care to give on the subject of BREEDING ?

23.—Do you believe in the commercial possibilities of GOAT-FARMING ; and, if so, in what conditions ?

24.—Kindly add here any remarks on any point on which you care to touch, such as exclusion of foreign blood through the refusal of the Board of Agriculture to allow the ADMISSION OF FOREIGN GOATS FOR BREEDING purposes.

REPLIES

H. S. HOLMES PEGLER, ESQ.

(GOAT-KEEPER FOR THIRTY-FIVE YEARS)

1.—Allerton House, Kingston-on-Thames.

2.—Country.

3.—Personally, I should state I have no goats of my own now, those kept here belonging to my daughter, to whom the practical part of the subject has descended. We keep the Anglo-Nubian still, a breed I was one of the first to adopt and recommend, commencing this cross shortly after the second Goat Show at the Crystal Palace in 1876. For general purposes and for points of appearance I consider this breed hard to beat.

4.—See "Book of the Goat."

5.—Ditto.

6.—Ditto, p. 196.

7.—In the summer, say from April to end of August or early September, a goat can be, during fine weather, almost wholly maintained in milk by grazing and browsing—that is, with grass, leaves, and vegetable refuse—without resorting to corn and hay.

8.—The Alpine, Toggenburg, and Maltese as breeds, and the Anglo-Nubian in certain *strains*. As the latter is a made-up breed (like the Orpington fowl), so much depends on a particular strain. With the Alpine, Toggenburg, and Maltese, these coming from countries where breeding for milk has been carried on for centuries, the milking quality is more fixed in the blood, and transmissible.

9.—See opposite page :

YIELD OF MILK FROM A HERD OF FIVE TOGGENBURG GOATS BELONGING
TO MR. C. A. GATES, OF GUILDFORD.

Goats' Names.	Season of Milking.	Date of Kidding, 1898.	Due to Kid 1899.	Now producing, Feb. 7, 1899.	Quantity of Milk given since Kidding, 1898.		Largest Quantity given on any one Day.		Daily Average.	Remarks.
Melissa ...	1st	Mar. 27	Feb. 16	Dried off Dec. 10	lb.	oz.	lb.	oz.	lb. . oz.	Pure Toggenburg.
Olga ...	2nd	Feb. 7	Feb. 9	1 lb. 11 $\frac{1}{4}$ oz.	1,664	4 $\frac{1}{4}$	8	11 $\frac{1}{2}$	6 7·19	" "
Feodore ...	2nd	Mar. 1	May 11	3 lb. 3 $\frac{1}{2}$ oz.	1,592	13 $\frac{3}{4}$	7	0	4 5·83	" "
Barbara ...	2nd	April 5	Feb. 9	Dried off Dec. 15	1,382	2	6	3 $\frac{1}{2}$	4 0·28	" "
*Wilhelmina	2nd	Feb. 19	Feb. 9	Dried off Dec. 10	1,267	3 $\frac{1}{4}$	7	5	4 15·8	Three-quarter Toggenburg.
				Total ...	1,234	7	6	12 $\frac{1}{2}$	4 3·15	Pure Toggenburg.
					7,140	14 $\frac{1}{4}$				

* This goat has only one teat, having lost the use of the other at first time of kidding.

10.—From £7 to £10—more if a pure Toggenburg, as the breed is scarcer in England.

11.—A small head, slender neck, well-sprung ribs, wide between hip-bones ; a long body, wedge-shaped (*i.e.*, narrow at the chest and wide towards the hind-quarters—at the same time, not so narrow as to show deficiency of chest) ; a deep bag, soft and supple, that can be crumpled up, so to speak, in the hand after being milked.

12.—This greatly depends on whether the goat is to be reared for exhibition or only as a milker. In the former case, it should not be allowed to have kids until two years old. In the latter case, I see no objection in putting a kid born, say, in February or March to the male in the succeeding December, so that she brings forth when about fourteen or fifteen months old. Her growth may be somewhat sacrificed, and she may not attain the size she would in the former case, but her milking qualities are certainly not likely to be impaired.

13.—This greatly depends on the animal, but after eight or ten years I should not care to keep a milch goat, though cases are known where they have gone on milking until twenty.

14.—(a) I have not sold any goat's milk for many years, but in the early days I have obtained as much as 2s. 6d. per quart.

(b) Never sold any.

(c) About £2 2s., when well-bred ones.

15.—Hornless goats decidedly, chiefly on account of their being less dangerous accidentally, but also less pugnacious. Further, for the very practical reason that they always command a more ready sale.

16.—Unquestionably. See doctors' opinions.

17.—I have found this very occasionally in some goats, but it is rare.

18.—See “Book of the Goat.”

19.—Ditto.

20.—Ditto.

21.—Ditto.

22.—Ditto.

23.—Ditto.

BIRKBECK RAVENSCROFT, ESQ.

(GOAT-KEEPER FOR MORE THAN THIRTY YEARS)

1.—The Noke, St. Albans.

3.—At the present moment fifty Anglo-Nubian.

4.—Stalls to hold two apiece. When they go out in the fields a boy goes with them.

5.—Autumn : 7 a.m., bran and a few oats ; 8 a.m., hay (a little) ; 9.30 a.m., swedes and bran (mangolds a little later on) ; 12 noon, cabbages ; 4 p.m., swedes and bran (mangolds a little later on) ; 5 p.m., fill up their racks with hay. Anything left in the morning cleared out and given to Jersey cows.

6.—No idea ; frightened to inquire.

7.—The principal thing is that they get enough. Mine walk about in clover or sainfoin up to their bellies.

8.—Best milk, Anglo-Nubian ; most, Swiss or Irish.

9.—A very good milker 2 or 3 quarts per day. A few years ago I had a goat at the Dairy Show which gave over a quart, and had been in milk 556 days.

11.—The same as a cow.

12.—At about eighteen months old, so as to kid about two years old.

Very seldom get a goat to kid in the autumn

13.—As long as they breed I should think their milking would improve.

14.—Never sold any.

15.—Have no choice. Think horned goats are hardier.

16.—Yes.

17.—No, certainly not. It all depends on feeding. Keep a cow at the top of a mountain, and feed on a few herbs that grow there, and you will not be able to drink the milk.

18.—Grazing is the principal thing.

20.—Yes. Lost thirteen last year between November and February. Neither myself, herds-men, shepherds, local vet., nor the Board of Agriculture could find the reason.

21.—Had no experience.

24.—A great mistake. Managed to get one, supposed from Chitral, two years ago last January, and have taken the stud goat prize two years running with him, and he is making a wonderful difference to my herd. All last year's kids are larger already than their mothers, the largest goats there are.

[For Mr. S. Woodiwiss's reply, see p. 153.]

COLONEL HERBERT E. MUSGRAVE

(GOAT-KEEPER FOR TWENTY YEARS)

1.—The Grove, Bolton, Lancashire.

2.—In suburbs of town.

3.—Mixed breed, mainly Toggenburg.

4.—Shed in garden. Small stalls, with hay-rack and small water-basin; neck-collar, with ring on upright bar to slide. When weather suitable outside, loose, in small field. Bucket of water in field. A small feed of wheat and Indian corn when brought in in the evening. At milking-time a small ball of damped linseed-meal.

5.—No difference in food, except that, when not

turned out or no grass, more corn is given morning and evening. Hay always accessible.

7.—They certainly can be maintained on grass, but a little corn improves them, and influences beneficially the milk both in quality and quantity.

8.—Milking powers are in my opinion a matter of breeding.

11.—Broad hips, large udder, and long head.

12.—At two years.

I am seldom without goat's milk all the year round, and have three goats. It is somewhat difficult sometimes, but I am fairly successful.

13.—After six years old.

14.—(a) Never sell any. (b) Have to give them away. (c) Give them away.

15.—Hornless. My main reason is that, being without horns, they cannot get fast in the hurdles, and are safer with children.

16.—Certainly, and much preferred in the house.

17.—Some milk has, but I have succeeded in getting a breed from which the milk has no disagreeable flavour, and if a goat when first milking gives a milk with this disagreeable flavour, I get rid of the goat.

18.—No.

19.—I like to taste the milk before I buy the goat, and I would not buy the best goat living if the milk had a disagreeable flavour.

20.—No.

21.—Too luxurious a pasturage is harmful. My pasture is a mass of weedy grass—all kinds of weeds.

23.—No. People will not pay the price necessary to make a commercial success.

24.—For breeding purposes and the introduction of new blood importation free should be allowed to those who will undertake the expense. Not many would be imported.

R. J. PITT, ESQ.

(GOAT-KEEPER FOR ABOUT TWENTY YEARS)

1.—Wellesbourne, near Warwick.

3.—One milch goat and two kids—Anglo-Nubian crossed with Toggenburg.

I have kept pure-bred Toggenburg, Anglo-Nubian, Welsh, and Irish.

4.—My goats are kept in a shed with a small open yard attached, and are only shut in the shed during very cold weather.

5.—My goats are usually kept in and fed with corn and hay, and any refuse from the garden that can be spared, such as cabbage, carrots, parsnips, small potatoes, pea-haulm, etc.

7.—From May until the end of September entirely by grazing, but will give better results if supplied with corn twice a day.

8.—Toggenburg and its crosses.

9.—(a) Not less than 2 quarts daily for first three months.

10.—£3 to £5.

11.—Well-developed udder, good wedge-shaped body, and the hair at the back of the thighs growing in the form known by dairymen as the escutcheon.

12.—Not before she is twenty months old.

13.—About the sixth year.

15.—I prefer hornless goats, as being less dangerous, especially with children, and also more easily provided for when kept tied in small goat-house.

16.—Yes.

17.—No. Have only known one instance of goat's milk with disagreeable flavour, and that was a half-bred Swiss goat.

18.—Fair pasturage during the day, with a liberal feed of corn (oats preferred) twice a day, gives the best results.

19.—(a) In the country anyone with a small amount of grazing ground should certainly keep goats.

(b) Have no experience to guide to give an opinion.

20.—No.

21.—Have known two goats poisoned by eating the clippings of yew-trees.

24.—I consider the present restrictions of the Board of Agriculture against importation of foreign goats have been greatly to the disadvantage of goat-keepers, as a reference to the Herd-Book will show, as so many goats entered are in-bred. At the same time, I would not advocate unrestricted importation ; but when a society like the British Goat Society is willing to undertake the supervision of the imports, that should be a sufficient guarantee that only desirable animals will be introduced into the country.

CHRISTOPHER J. H. TOWER, ESQ.

(GOAT-KEEPER FOR SEVENTEEN YEARS)

1.—Weald Hall, Brentwood.

2.—In enclosed park with deer.

3.—Cashmere (white), nineteen in number.

4.—They run wild, except at kidding-time, when nannies are taken into shelter for a few weeks.

5.—Same feed as the deer.

16.—I can only say that I consider goat's milk saved the life of my second son when he was little more than an infant.

ARTHUR P. BOSSERT, ESQ.

(GOAT-KEEPER FOR FIFTEEN YEARS)

1.—Caldecote, near Cambridge.

3.—About seventy, all Toggenburgs, except two or three. Have had a few English and Anglo-Nubian.

4.—It is a very easy matter to keep a goat tethered simply by adopting the following arrangement: A peg made of $\frac{1}{2}$ -inch round iron, with an eye turned and welded at the upper end, and the lower end drawn out to a dull point, a swivel attached to the peg by means of a welded ring, a piece of good rope or a light chain fixed to this, and toggle attached to the other end of the rope, and the tether is complete. (The toggle is a piece of wood joined to the rope in the middle, and of such a size that it can be easily pushed through the ring attached to the goat's collar, but cannot come through again. The top of a T represents the toggle, and the stalk the rope.) The swivel is most important. The length of the rope should be at least 15 feet, and that of the peg 12 inches, but that depends on the nature of the soil. For heavy soil, and during the summer months a shorter peg is better. The peg should always be driven with a mallet, and must, of course, be driven into the ground down to the ring, so that there can be no possibility of the rope twisting round the peg. Now attach a ring (suited to the toggle) to the goat's collar, and you are in a position to fix the goat to the tether and to release her at night with the least possible trouble. It is usual to move the peg so that the goat may get fresh bites, but the drawing and driving of the peg may be avoided to a great extent in the following way: Procure another piece

of rope, fix another toggle to one end of this, and tie, say, six rings into the rope. Pass the original toggle through ring 1, and the second toggle through the ring on the collar. Now, instead of moving the peg, all you have to do is to take toggle number 1 out of ring 1, and pass through ring 2, and so on, a matter any child can attend to. The distance between the rings should be less and less as the rope increases in length (thus, the distance between 6 and 5 will be less than that between 2 and 1); otherwise the goat will get a larger bite as the rope increases in length, the circle being greater.

5.—Middle of May to middle of August, grass and hedge-stuff only, or practically so. During winter months, hay and roots at 8 in the morning; 12 noon, cabbage, acorns, oats; 4 p.m., bran-mash, 1 quart to each full-grown animal, with a little crushed oats, barley-meal, etc., added for change; 8 p.m., hay, roots. Feed liberally. Various things for a change.

7.—From the middle of May to the middle of August, if grass of first-class quality.

8.—In this country the Toggenburg breed undoubtedly. In my opinion all Toggenburgs, to all intents and purposes, even half-bred, are good milkers. With other breeds (in this country) it is a matter of strain.

9.—Five and a half pints at four to five years is good (all properly measured); 4 to 5 pints (measured) is satisfactory when in full milk at the second kidding (say $4\frac{1}{2}$ pints).

10.—With a very small profit, which does not actually pay for labour, etc., properly such a goat must cost at least £4.

12.—If she has run with the dam right through the summer and is well developed, at nine or ten months; otherwise not before eighteen months.

14.—(a) In an out-of-the-way country place 3d. at the door; in town 5d. and 6d. per quart.

(c) Kids for stock vary enormously in value according to quality—10s. to £2 or more.

15.—Hornless: the *only* reason, that horns are dangerous to human beings and other goats, especially when in kid.

16.—Infinitely. I have known a number of cases of children being saved by goat's milk. Children who are sick on cow's milk are not sick on goat's milk, and many children who starve on cow's milk thrive on goat's milk.

17.—Yes. Some people detect a flavour of which they disapprove. If milking is performed carefully (*i.e.*, in a cleanly way), the milk cooled at once, and consumed within, say, twelve hours of milking, objections are practically nil. Boiled it acquires a flavour. Never boil goat's milk—boil it and spoil it.

19.—Feed liberally, house comfortably, treat kindly.

20.—Happily no! if scours (diarrhœa) be excluded. Feed well all the year round; never allow them to get low, and disease, even diarrhœa, is reduced to a minimum. House must be draught-proof, but ventilation good.

22.—The only advice I can offer is, Employ a Toggenburg male of best parents. This is, in my opinion, the safest way to obtain good stock.

23.—No. A moderate profit may, of course, be made under exceptional conditions, but to all intents and purposes the answer is "No."

24.—That the Board of Agriculture should prohibit the importation of goats is a most absurd matter. The English people have a habit of standing in their own light, and in the matter of fostering goat-keeping do not know their business. In Germany and Switzerland goat-keeping is supported ex-

tensively by the State, for the simple reason that they know the importance of giving the new generation a good start in life ; also that it makes people thrifty to produce their own foods, and much waste is made good use of by feeding to a goat. It is also the means of obtaining useful work (economically) from the female portion of the population.

BRYAN HOOK, ESQ.

(GOAT-KEEPER FOR FIFTEEN YEARS)

- 1.—Beefolds, Churt, Farnham.
- 3.—Toggenburg and Toggenburg-English. Experience also of Maltese, Spanish, and Anglo-Nubian.
- 4.—See my book, "Milch Goats and their Management."
- 5.—Ditto.
- 6.—Ditto
- 7.—Ditto.
- 8.—Ditto.
- 9.—Ditto.
- 10.—Ditto.
- 11.—Ditto.
- 12.—Ditto.
- 13.—Ten years.
- 14.—Fourpence a pint. (*b*) Kids unsaleable as food. (*c*) Stock prices, 10s. to £2, according to breed.
- 15.—Hornless, as they cannot do each other so much injury.
- 16.—Most decidedly.
- 17.—Only under wrong feeding.
- 19.—See my book.
- 20.—Ditto.
- 21.—Ditto.

22.—The finest goats in the world might be produced by using pure Toggenburg stud-goats to the existing Anglo-Nubian herds.

23.—Certainly, if a market could be found for the milk. At present the demand is insufficient, and prejudice too strong. The stock also would be very difficult indeed to obtain, as importation is forbidden.

24.—It is impossible to condemn too severely the action of the Board of Agriculture in their prohibition of the importation of foreign goats for breeding purposes. There is no valid reason to offer for the prohibition, and one can only suppose that the Board is actuated by the prejudice so general among the agricultural interest against these useful animals. The Agricultural Board of the United States is at present spending considerable sums in the importation of foreign goats (I last year had a visit from their representative), and yet in this country private persons are forbidden to do this even at their own expense.

HERBERT E. HUGHES, ESQ.

(GOAT KEEPER FOR TWELVE YEARS)

1.—The Bungalow, Broxbourne, Herts.

2.—Town and country.

3.—Thirty-eight: English, Anglo-Nubian, Anglo-Toggenburg, Saanen, Anglo-Saanen, Anglo-Nubian-Saanen, Anglo-Toggenburg, Anglo-Chitral, and Anglo-Nubian-Chitral.

Have had experience of pure Nubian and pure Toggenburg.

4.—I consider housing two goats in a stall 4 feet square best, if a fair number of goats are kept.

Tethering is good if only a few goats are kept, but I much prefer to let them have a run over as much land as possible, so that they will be able to vary their food.

5.—Summer : If grass run is available, and plenty of it, very little else is required, but a little corn is advisable. Winter : Morning—coarse middlings and bran, or oats, hay, and water. Mid-day—hay. Evening—bran and oats, mangold and bran, green food (all possible), water, hay, and salt.

6.—(a) Sixpence a week.

(b) Twice or three times this amount.

7.—Should say six to nine months.

8.—I believe that any breed can be made milkers by selection and proper attention. Swiss breeds are the best known milkers, because selection has been very carefully attended to. Saanens : half-bred at least, are excellent milkers. Venus, kidded March, 1907, giving April, 1908, without having kidded again, $6\frac{1}{2}$ pints daily. Year's yield, $159\frac{1}{2}$ gallons, or nearly $\frac{3}{4}$ ton.

9.—The smallest quantity would be 2 quarts or more per day.

10.—The 2-quart goat would be worth 40s. to 50s.; the 4-quart goat would be worth £10 to £20.

11.—The contents of the pail after she has been milked; two tests to be taken, one morning and one evening—a very ordinary way, but the only true one I know.

12.—Fifteen to eighteen months.

Keep milking your animals if you want milk all the year round. Although the goat may fall off milking considerably, giving even as little as an egg-cup full, she will come on with the new grass in the spring.

13.—Eight years.

- 14.—(a) Never offered it for sale.
(b) Never sold any for killing.
(c) £2 to £5.

15.—Hornless. Horned goats are a terrible trouble if more than one goat is kept, besides being dangerous to handle ; not because they are not as tame as hornless, but accidents easily happen if horned goats have to be handled.

16.—Yes.

17.—No.

18.—Feed well (I mean in plenty) ; it matters little what. Corn, however, must be given sparingly.

19.—Do not buy cheap goats because they are low in price. They may prove the dearest at the finish. If you can get hold of a really good goat, do not trouble about the price. She will prove the cheapest in the long run.

20.—Not much.

21.—There are, I believe, one or two plants said to be harmful to goats, but I am quite willing to take other people's word for it. I have never tried them. Privet is said to be poison to them, but mine have eaten it without ill-effect.

22.—Breed from healthy stock, and on no account in-breed.

23.—The commercial possibilities are no doubt many—viz., by selling the milk and by selling goats in milk. There are never sufficient goats in milk at this time of the year (winter) to meet the demand.

24.—The number of good milking goats in this country is far too few, owing to the exclusion of foreign blood. In fact, unless a few head of animals are imported shortly, I really do not know where breeders are to find unrelated blood, and to in-breed or use inferior males will mean failure to goat-breeding in this country.

THE LADY DUNLEATH

(GOAT-KEEPER FOR ELEVEN YEARS)

1.—Ballywalter Park, Ballywalter, Co. Down.

2.—Country.

3.—Six females, two male kids, three female kids. Anglo-Nubian, Toggenburg, Swiss Toggenburg, Anglo-Nubian-Toggenburg.

4.—I keep mine in a grass paddock, with a shed (hard floor and bedded with straw). In summer they go in and out as they like. In winter they are let out in the paddock for a few hours each day, and have a feed of oats and turnips—sometimes a little cake—and hay in shed. They also do well tethered, if required.

5.—In summer they only get at grass; in winter some hand-feeding.

7.—The following is an account of milk given in twenty-four hours (June 13, 1906):

	A.M. Qts. Pts.	P.M. Qts. Pts.
<i>Celandine</i> : Anglo-Nubian; born January, 1899; one kid on April 4, 1906 -	0 1	0 1½
<i>Blackbird</i> : Imported Swiss; about eleven years; one kid on April 6, 1906 -	1 0	0 1½
<i>Chameleon</i> : Anglo-Nubian; born February 7, 1902; two kids on April 9th, 1906 -	1 0½	1 0
<i>Lark</i> : Swiss Toggenburg; born March 4, 1904; two kids on April 4, 1906 -	1 0	1 0
<i>Garnet</i> : Anglo-Nubian Toggenburg; born April, 1904; two kids on April 7, 1906	1 0	1 0½

On the night of the 12th the kids were shut away from their mothers, and not allowed back until after milking on the night of the 13th. These goats were milked every day a certain amount, and then their kids were allowed to be with them.

12.—Eighteen to twenty months.

Have sufficient females to mate them at different times of year.

13.—I have a goat twelve or thirteen years old—a Swiss, imported—and she is giving as much milk as ever she did.

14.—I can sell my kids at three months old, male or female or neuter, for £1 each; after that, £2.

15.—Hornless are less apt to injure each other.

16.—Certainly. I give all mine away to the village for infants. That is one of my reasons for keeping goats.

17.—If kept over six hours.

19.—Breed from a male kid eight or nine months old.

Damp and wet are not good for goats. They ought to have a dry and sheltered place to lie in.

20.—I found that, till I provided a dry shelter for them, the liver was affected, and they wasted and died.

22.—Never mate a female under one and a half years old, and always use a male kid or goatling.

C. C. MACANDREW, ESQ.

(GOAT-KEEPER FOR TEN YEARS)

1.—Parson's Farm, Faygate, near Horsham, Sussex.

2.—In the country.

3.—English and Toggenburgs.

4.—The goats are tethered on the grass with chains about 10 yards long, and moved once or twice a day. They are brought in at night for about five months in the cold weather, but live out entirely the rest of the year. Their houses, with small yards adjoining, are much the same as large pigsties.

The young male goats are tethered when three months old, and kept away from the nannies. The young nannies are tethered when six or eight months old ; of course, they do best loose.

5.—The goats when tethered out in the summer feed chiefly on the grass, and also get all the odds and ends of vegetables, etc., from the garden : pea and bean pods, parsnip, beet, and carrot tops, cabbage and lettuce leaves, apple peelings, hedge trimmings, etc. In the autumn they are tethered under the oak-trees to eat the acorns, some of which are collected and given them later on in the winter, when they also have hay and a little bran in severe weather. The goats are offered water once a day in the hot, dry summer weather, but very seldom take any, even when in full milk.

6.—In the country many cottage people might keep a goat for nothing. Where the roads have wide grass margins a goat could be tethered, or the children could take it along the lanes to forage for itself.

7.—Hardy British goats in milk only need grazing while the grass is growing ; but foreign breeds seem delicate in England, and need generous feeding. The half-bred goats are hardy enough, and consequently, I think, more useful than some of the pure foreign breeds, such as Nubian and Toggenburg.

8.—Anglo-Nubian, the best for the English climate.

9.—A good average goat should give 2 quarts at least.

10.—A goat is worth £1 a quart (the same as a cow), which, unfortunately, places a decent goat beyond the reach of working men in the country, the only class which goats would really benefit.

11.—A goat should be a good shape, with big roomy body and wide chest, a short coat, no beard,

or only a small one, small horns or none, a good udder, and must be tame and gentle.

12.—Eighteen months.

13.—A goat will live and do well as long as its teeth are all right.

15.—I prefer hornless male goats, but do not mind about nannies, though hornless ones are easier to sell.

16.—I do not know about infants ; but I think that average goat's milk is richer than *ordinary* cow's milk, but not nearly so rich as the milk of Channel Island cows.

17.—Abroad goat's milk sometimes has a curious taste, through being carried in dirty skins. There is no flavour in clean goat's milk that could cause people to dislike it. I think that goat's milk is cleaner and purer than cow's milk, and certainly goats are far cleaner feeding animals than cows, which do not at all mind eating a fair amount of dirt with their food.

20.—I lost two Toggenburgs at different times with the goat disease. Since then I have been told that buchu leaves are the best remedy, but have not needed to use them. The dried leaves may be obtained from a chemist, and the goat will eat them readily out of one's hands.

21.—My goats have never eaten anything harmful, whether tethered or free. I believe foxgloves are poisonous, and there are plenty of them round my fields, but the goats never touch them.

23.—No. The public do not appreciate goat's milk or meat, and there is no market for either. If there were goats might be kept on land that was too poor for any other class of stock, only one would not want to keep a number of goats tethered ; and if kept loose, the strong fences necessary would be too great an expense to contemplate.

C. A. GATES, ESQ.

(GOAT-KEEPER FOR TEN YEARS)

1.—Oakdean, Ryde's Hill, Guildford.

2.—In the country, with a run on a very extensive common, with good feed of grass and furze, good soil. Turned out when dry only, in charge of a lad, during the morning. In afternoon brought in and tied up in their stalls, and fed with oats and hay and water.

3.—None now. Very sorry I had to give them up, but pressure of business compelled me, as I milked them all myself twice a day, and some heavy milkers three times a day for some time after kidding. It took too much of my time. I saw to their feeding at six o'clock in the morning, and milked them again at midday, and at night fed and watered them, and milked all myself, as boy left off at half-past five. I used to milk them at night, sometimes as late as ten o'clock.

4.—I never tethered the nannies; only the stud goats and billy kids, which require a strong chain and iron spike well driven in the ground, or they get loose. They require to be shifted two or three times a day, and not put on same ground very often.

My goats were housed in a large wooden house with thatched roof, nearly square built, with row of benches down one side made of slate battens, set about $\frac{1}{2}$ inch apart, and raised about 18 inches from the ground, just right for milking, and a row of loose-boxes about 4 feet square, raised and benched same as the other; the sides of loose-boxes made of same material, about 3 inches between, so as to get plenty of fresh air all round. Hay-racks to each bench, and loose-box and small pails to feed out of,

and one for water, fixed in holes in a board about 15 inches from bench. Water changed three times a day. On ground floor under benches dry white sawdust was scattered. This was brushed out, and fresh sawdust put down three or four times a day, always before milking.

5.—About a pint of best oats three times a day, and once a day (midday) $\frac{1}{2}$ pint Waterloo round feeding-cake when in milk. Hay *ad libitum* last thing at night. Greenstuff out of the garden three times a day—fresh, not stale. Having a very large garden, grow extra cabbage, cauliflower, lettuce, etc., so as to have plenty to give them all the year round; sometimes in winter roots (mangel) cut up. I grew small patch of Lucerne and another stuff, Portugal cabbage, a splendid feed for them—liked this especially. All this besides being turned out, which was really for exercise and health. I used to buy about 50 bushels of acorns at 1s. a bushel, and lay out on a floor of a loft above about 6 inches thick, which, when first stored, were given a stir every day for a few weeks to dry them. These were given them in the winter instead of the cake midday—only 1 pint.

6.—Cannot say; never reckoned it up. Cheaper where you have some cultivated ground, otherwise they could be kept in town, fed as I fed them; but if you had to buy all the green stuff it would be costly, and they would require a bare yard to run out in for exercise and fresh air.

Of course they could be kept on a very little land by stall feeding entirely, by growing your grass for hay, and growing plenty of green stuff and roots, and buying your corn; but in this case I should have a good-sized gravelled yard, with hillocks or boxes and things for them to play about on, and to be out in the sun for exercise and air. Never turn out

in wet. Put them in or give them a shed they can get under directly it rains. This is most important.

7.—Have had no experience. Have known some cottagers keep them so and get some milk, but nothing in comparison to what I got ; but what they do get costs them next to nothing. The shorter supply to some extent would probably be due to breed.

8.—On the whole, Toggenburgs. I have never known a bad milker, whereas I should say that in other breeds you come across many inferior milkers. That is from what I have heard of other people's goats. If I took up goats again I would not have any other breed. They look, too, more like a cow and milker than any other breed. No doubt the superiority of Toggenburgs is due to the fact that the variety has been bred for years for milking, not for meat. To those who cannot afford to buy a Toggenburg I should suggest getting the best of any good breed, and use nothing but Toggenburg stud goats, and buy a male kid of the pure breed every year. In time you would get almost, if not quite, as good a milker as the pure breed. A young billy kid you can generally get for a guinea.

9.—From 2 to 3 quarts by weight a day for four months, gradually getting less till they dry off. My best milkers kept well in milk till they went to the Dairy Show. On their return they gave very much less than before. It seemed to upset them being away from their usual surroundings. One year I weighed the whole of the milk from five goats—all I had in milk that year. They gave an average of 143 imperial gallons each, or 7,340 pounds, that is, 3 tons 5 cwt. 2 quarters 4 pounds.

10.—Pure Toggenburgs from 3 to 5 guineas at, say, three to six months old, and for likely prize-winners from 8 to 10 guineas.

12.—Best when they are eighteen months old, but I have had female kids ten to eleven months old get to the billy accidentally in one or two instances and then kid, and they did very well; but I don't think either ever made such big goats as they might have done.

13.—About fifth year of milking.

14.—(a) I sold mine at 4d. an imperial pint when I sold any. By putting a small advertisement in *Exchange and Mart*, I could generally get enough customers to take all I had to spare. Some I sold fresh and some sterilized, and we sterilized some for our own use when we had a lot over, and kept it to use—say, December to February or March—while they dried off.

(b) Never sold any for killing, but should say they ought to fetch 5s. or 6s., at a month; but it does not pay. Best to keep all the females, and knock on the head surplus male kids at once.

15.—Hornless; they look much nicer, and are safer.

16.—I should say yes, as most of the milk I sold was for this purpose, and many people will buy a goat for the sake of the milk for babies. I know many of my neighbours' children's lives were saved by it when ill and unable to take cow's milk, and I frequently had letters from parents saying how well their babies were doing after being put on goat's milk.

17.—Not if the milker avoids touching the stud goats or billy kids. While away from home once for a fortnight, I left a man in charge, who, I suppose, was not careful as to this, and when I returned I found that my sister's family, who had my house during the time, and who were looking forward to a plentiful supply of goat's milk, which they enjoyed when on a visit, while I was at home,

could not touch it, it smelt so strong. We have often had people staying with us who did not know but what they were drinking cow's milk. We also used to separate some and make butter, in which we put a little butter-colouring, when it looked and tasted as nice as cow's butter; and the cream was very good, too. But you must have a small separator for this, as you cannot skim it from a pan—at least, that is what I found.

19.—In the first place, go in for one only unless you have had previous experience, and get a good one due to kid, or week or two after, in full milk. Go to a noted breeder; you may have to give a good price, but it will pay. Otherwise, you are sure to be taken in, unless you get some one else to buy for you, or, better still, go and see the goat milked out dry yourself. Note the time, and go again a fixed time after and see it milked the second time, and *weigh the milk*, not measure it; and by multiplying the number of hours, see what that would amount to in twenty-four hours. Reckon about 10 pounds as equal to 1 gallon. Another way is to get a kid, after it is old enough to leave the dam, and rear it; mate it at eighteen months with a stud goat from good milking strain.

20.—Very little; and very little can be done with medicines—at least, I was never successful in curing with them. I always found dieting them best, if ill, such as giving less green food and no oats, but hay only for a few days. But mine were seldom ill.

21.—Rhododendrons, laurels, privet, and lords-and-ladies. Some say acorns are not good, but I never found them so. Some have an idea they lessen the milk supply.

22.—Nothing special; but avoid in-breeding more than you can help.

23.—To feed as I fed, you would have to keep

nothing but the best milkers, and do the thing with as much care and trouble as you would with a herd of cows. Advertise just enough—say, in *Bazaar*—to get sufficient customers to consume the milk. One proprietor only—live amongst them and milk and feed them oneself, and, if necessary, with the help of own family. Breed good ones, and sell all not wanted at good prices. No earthly use to rear billies unless of some pure breed. One would have really to start in a small way, and have some other source of income for the first few years (five or six), till he had bred and reared sufficient nannies to produce enough milk to make it worth while to push the sale. Most of this would have to be sent away per rail; no one district would give you enough customers. And another thing, you have to get a name for selling kids. Only one in a hundred, I am afraid, could make a living, unless he lived in the country with cheap land, and lived very, very simply, which can only be done by being a vegetarian, with benefit to his health, which one must possess to get the required energy for such a job. Above all, he must love his work and goats, or he'll soon tire. I should not like anyone, on the strength of what I have said, to start with an idea of getting a living. I tried a poultry-farm some years ago, but it failed, and so may a goat-farm. You can't make it pay. Only a small profit, as the quantity of milk (unless you kept a large herd) is limited; and then would come in the question whether you could keep them healthy. The income-tax surveyor once sent me a form to fill up, as he saw I kept so many, but I was obliged to return it with the remark that the balance was on the wrong side.

24.—I am decidedly of opinion that stud goats should be allowed to be imported for the sake of fresh blood.

REV. E. P. BOYS-SMITH

(GOAT-KEEPER FOR EIGHT YEARS)

1.—Hordle Vicarage, Brockenhurst.

2.—In the country.

3.—Three adult she-goats and five kids (two male, three female). Of these a he-kid is pure Toggenburg, one she-goat is Irish, and all the others are Toggenburg crosses with the proportion of Toggenburg varying from one-half to seven-eighths.

I have kept previously: One pure Toggenburg, two crossed Toggenburgs, three English, four Irish. My present number is less than I have had for some time.

4.—My goats are kept in two houses: (1) Iron sides and roof, all match-boarded within—10 feet by 10 feet; (2) board sides with lean-to iron roof, unlined, about 8 feet by 5 feet. In both the goats are separated by stalls and chained to vertical bars. A rack is used for hay, etc., and a small movable box in each contains corn.

Throughout summer—say May to September (inclusive)—they are tethered out on grass by day whenever the weather is fine. In March, April, and October, if the season be good, this may also be done for three or four hours on fine days, and even in February and November if mild, bright weather prompts it. In winter they stay in entirely. They are always in at night, save rarely in very steady weather at midsummer.

Floors of houses are brick, properly sloped for drainage. On these the goats are bedded with litter, as a rule, though I have used wooden platforms, consisting of 2-inch strips, and separated by $1\frac{1}{2}$ -inch spaces raised some 4 inches from ground.

I believe a free run out of doors both summer and winter to be a very great advantage, but my conditions do not admit of it. The advantage is great both for health and for milk yield.

5.—When grass is in good condition—say May to July (inclusive)—it forms the staple food, and then little hay is used except when weather keeps the goats in. At all dates they have such leaves as are available—*e.g.*, cabbage, carrot, pea-haulm, etc.—from the garden, prunings from fruit-trees and other deciduous trees, the season determining what is available. In winter they have hay twice or sometimes thrice daily, and they always have corn-feed morning and evening. This often consists half of dry bran, or sometimes sharps, mixed with oats, or less often dari, buckwheat, maize, occasionally wheat; sometimes peas or beans (split) instead of corn, and sometimes the bran or meal is omitted. The greater the variety the better. In early spring they often have a whole or half mangold apiece daily. Odds and ends, such as pea-husks (green), apple peelings, and small or bad apples, potato peelings, occasionally small potatoes boiled (with meal), as available, are given. All must be quite clean. Apple and pear trees are usually pruned, chiefly mid-August to mid-October, for the goats' sake, and the leaves much relished. Water is offered twice or three times daily, but is often refused when green food is abundant. Acorns are useful in winter.

6.—Of suburbs I have no experience, and speak only of country. Very much must depend on whether some grass-land can be used or not, and whether there is a garden to draw upon. If these two can be had the cost through summer comes to little more than that of the corn. In winter the hay largely increases this. The amount both of

corn and of hay will depend on (1) the size of the goat, (2) whether it is milking heavily, a little, or not at all; and some goats will want fully twice or twice and a half as much food as others. But speaking of the average the error is not, I think, great if one puts the cost at: Corn, 1d. daily; hay, 1d. daily through winter; and grass, leaves, etc., extra. The last can generally be had in the country without actual cost for a *few* goats during summer. *Assuming this*, I should say cost is about 7d. weekly for five months, and 1s. 2d. weekly for seven months; say £2 10s. per annum.

7.—When grass is at its best and weather good this *may* suffice, though in most instances corn or its equivalent is needed if a large yield is given. But after midsummer grass is much less nourishing, and in spring-time the succulent young grass often scours. Consequently first-rate grass cannot itself be maintained during much more than two or two and a half months. It follows that if milking is to continue through a much longer period (as it should with good goats) grazing alone will not maintain it.

8.—A good milker depends on two things: (1) The quantity yielded in a day, (2) the length of time during which the yield of a fair quantity continues. (The quality of the milk is also of importance.) Of these two things, the *second* is the more important, and in this the value of both strain and breed show more than in the *first*. But the value of both strain and breed also lies largely in the fact that milkers will breed milkers, as a rule, when strain or breed is pure, whereas where it is not a considerable proportion of the kids of milkers will not be milkers. I do not believe the contrast between strain and breed to be a real contrast. A breed is only a strain that is older and better fixed.

So far as milking is concerned, there is no *natural* breed of milkers. The Toggenburg and similar milking breeds have been fixed as milkers by artificial (it may be half-unconscious) selection. In a really skilled breeder's hands the selection may be more rapid, and a strain may fix a type therefore as a breed does, only quicker.

I recommend the Toggenburg, especially for practical purposes, the use of the *pure* Toggenburg sire.

9.—A goat which will give 600 pounds milk, say 2 pounds daily, during ten months, does (in the way of profit) fairly. Of course she will give much more daily during her second, third, and fourth months than during her eighth, ninth, and tenth; probably she will give five times as much. But it is not too much to look for 800 pounds instead of 600 pounds, and exceptional goats will range up to 1,200 pounds or more, though the upper limit is *very* exceptional.

10.—An answer is hardly possible, as so much depends upon age, breed, the market in which it is offered, etc. Assuming an ordinary English or Irish goat of no particular breeding, which yields 700 pounds, its worth may be put at about £3 to £6, according as it is to be sold just after kidding or just before going dry. But in point of fact one may meet with such a goat at any price between 15s. and £15.

11.—A hollow face—*i.e.*, sharp ridge to nose—and prominent eyes, with wide forehead, and sunken cheeks; high and sharp withers; wide hips; rounded ribs; large, soft udder; large teats. General bearing and appearance must be nervous and eager, and frame bony. A slab-sided, sluggish goat is useless. Perhaps the best single characteristic is depth steadily increasing from behind the fore-legs *all the way* to the hind-legs, *not* lessening again to the udder.

12.—At anything over ten months old if well grown for her age. Sometimes this may be reduced to eight months if the kid is of early development, but ten months is needed for a safe rule.

Of course an all-the-year supply is aided by letting some goats kid early and others late. But no goat which kids very early or very late (especially the latter) will give as much milk in the year as if it had kidded nearer to April.

13.—This varies greatly with individuals, and also with the general treatment. Broadly, a goat should not fall off for age till after it is six years old. A few do not till they are twice this age, or nearly.

14.—I have never sold milk or kids for killing. I should probably get no better price for goat's milk than for cow's near at hand, and prejudice would prevent my selling kids for killing at any price at all. For stock I have sold kids at weaning from 10s. to £2 2s. There is no profit in the first price. Roughly speaking, a kid costs during its first nine weeks of life as much as in its next nine months if it be reared economically. (I eat my spare kids, and find them excellent when quite young.)

15.—Hornless: (1) They are safer, especially with children about; (2) they do less mischief to fences, racks, etc., and sometimes to one another; (3) they are more convenient to deal with and feed in stalls, and need less space.

16.—Much better. It is both more nourishing and more digestible. I have proved this with all my own children, and with others also. It causes considerably less acidity in the stomach, with, of course, less flatulence and pain and sickness resulting. Some children who *cannot take* cow's milk can manage goat's milk very fairly. It has also the great advantage of being free from

tuberculous infection, which may be present unsuspected in the cow's milk.

17.—It always has its own flavour, which is not that of cow's milk. Some persons like it for this reason, and others dislike it, while some have not discrimination enough to notice the difference. Some prefer it to cow's milk when cooked, but prefer cow's milk uncooked. As a rule, I think children prefer goat's milk, except when habit determines a preference the other way. The flavour is rarely disliked (prejudice apart) if the goat has been suitably fed and if the milk is fresh. When the milk has stood for a long time its characteristic flavour both deteriorates and increases. Wrong food may give a disagreeable taste, as it does also to cow's milk.

18.—Free range if possible. Feeding for health is feeding for milk, and I set no store by special feeding for the latter.

19.—Begin with few goats, and increase numbers with experience. If you breed, use only a choice male of an established breed or strain, probably only a pure Toggenburg male if you can. Keep all food fresh and clean, and vary it as largely as possible; leaves are best of all. Do not trust to the virtue of elaborate or expensive houses and appliances for the success of your goats, but to the intelligence and assiduity of your own personal care and observation, and remember that a goat is more like a sheep than a cow, though it has a nature and needs of its own.

20.—Scouring is my greatest trouble. This may arise from food or chill, and then it weakens unless stopped. Or it may be the result of increasing debility, when it usually kills. Goats seem very free from specific diseases, but are by no means robust, and sometimes they just diminish in vitality till

they waste away and die from sheer weakness, with no apparent cause. In such cases loss of appetite, offensive breath, and scouring are symptoms which develop as time goes on.

21.—Pods of laburnum and bladder-senna are fatal poisons, but some goats will eagerly eat them if in reach. I avoid evergreens, ivy excepted, but no injury necessarily results from their use in reason. I avoid turnips, which are not relished, and spoil the milk. Wheat passes through the goat undigested very often, so I have discontinued it. Much maize is not good, but a little is useful. Winter grass and quite young spring grass are apt to be harmful, but this depends on the condition of the grass and of the goat.

22.—A male goat of a fixed type should always be used—*i.e.*, of a type fixed by strain or breed. In-breeding is commonly not injurious unless continued, when it debilitates; it is constitution, not character, which suffers from continued in-breeding.

The age of the sire is not of great importance so long as he is not much less than six months, nor old enough to be getting infirm, which may not be for a dozen years, nor does his age determine the proportion of the sexes, as is sometimes believed. The kids of a young or old dam are usually of less vigour both in growth and constitution; kids to be reared should come of a dam from two to six or seven years old if possible.

23.—I have never known a goat-farm, and I think such would rarely succeed. Public prejudice would be against any large sale of milk at its real value, except after transmission to considerable distances in small quantity; *skilled* labour would not be easily secured to cope with large numbers of goats. But there are places where a considerable number of persons may be found who will pay a

high price for goat's milk for invalids and children, and there a small goat-farm might do well. A goat will, I believe, give more milk in proportion to the food she needs than a cow, and obviously if this can be sold for 1s. a pint or so (as occasionally it can), there is scope for money-making.

24.—The Board of Agriculture and Fisheries ought certainly to license the importation of stock goats under proper conditions, to recruit breeds like the Toggenburg, Saanen, and others, and to improve strains in this country. Such licence, so long as it may remain more or less exceptional, ought to be given to representative bodies of goat-breeders, such as the British Goat Society or the Toggenburg Club. On the last occasion when a licence to import was given this was to the secretary of the British Goat Society, and the Board of Agriculture affirms that it was given for the British Goat *Society*; but it was not so treated, and never came before the Society at all until the goats had been imported and distributed. This proved a serious set-back to importation.

The great obstacle to the goat becoming (in the country) *vacca pauperis* is ignorant inertia. A goat is an animal with habits, needs, and characteristics of its own which ought to determine its treatment, but cottagers almost invariably start with two fixed assumptions: (1) That a goat is a hardy creature that can eat anything and stand anything; (2) that as it milks, what is suitable for a cow must be suitable for a goat. Of course, kept on these lines goats commonly prove failures.

WILLIAM SMITH, ESQ.

(GOAT-KEEPER FOR EIGHT YEARS)

1.—Holland House, Swallowbeck, Lincoln.

2.—In a suburb of Lincoln, practically country.

3.—Thirty goats : Anglo-Nubians, Toggenburgs, cross-bred Anglo-Nubian Toggenburgs, Alpine male, Toggenburg male, Anglo-Nubian (three), Anglo-Nubian Toggenburg (one). No other breeds save ordinary mountain goats.

4.—All goats are housed in stables, and run loose in them. Racks are put all along one side, and kept filled with hay. They run loose in fair weather, with a boy in charge. My holding is $6\frac{1}{2}$ acres, divided into ten portions. For any special change they are sent down the country lanes, but not much, though it is very advantageous, when possible, in winter. I stall-feed in a large goat-house, using roots, hay, and corn, according to their fancy. Males are kept in a special house. Raised floors are provided for them to lie upon, and they are cleaned out daily. No straw is used. Floors are sanded, being raised and slightly sloping to the front ; no smell is noticeable. A gutter at foot catches any moisture. I always house at night, and keep in until dew is well off the grass, as diarrhoea results, and consequent loss. Each stall holds two goats, they liking company. A manger runs the full length of house. I object to hayracks ; so much is pulled out and wasted, hence my using a deep manger for the hay. Roots are washed and put in whole for them to scoop out. The shells are removed, and cut up for other food. I have just built two houses—32 feet by 15 feet, and 30 feet by 12 feet.

5.—During the summer-time I withhold corn except to those in full milk. Hay is always provided. Continual change of pasture, with leaves and hedge-clippings, etc., keep them in good health. Rock-salt is provided, being kept in each stable in a tin, and frequently washed during the winter. Hay *ad lib.*, and corn early morning, green food or roots following. Roots at midday, unless fine enough for a run out. Lamb food or corn and bran at night, varying the kind frequently, and observing carefully each individual like and dislike to any particular food. Mashers occasionally, and always good hay. It is much more important than corn. Tree branches and trimmings for them to get bark from are very beneficial.

6.—I consider in winter a goat costs 1s. per head in the country, not counting greens and things one gets out of the garden, and 2s. in the town ; but an enormous lot is wasted unless constantly watched, and the remains picked up and cleaned carefully. If allowed to do as they like, 1s. per day would not be enough, and they would look none the better. Careful provision must be made for feeding them, so that they are unable to waste or throw it out.

7.—I think it possible, if goats are tethered on good land and frequently changed, that they may be kept six months of the year on grass alone (with hay at night). Change of pasture is the chief factor in health and milk production. The season must be warm, and not too wet, and they must have shade from the sun. If only one goat is kept and it be allowed its liberty, it will almost get its own living.

8.—This is a difficult question to answer. I think it is chiefly a matter of strain. Toggenburgs in warm, fine weather give a quantity. Anglo-Nubians give quality. I have found the Anglo-Nubian, crossed with the Toggenburg, a handy goat,

and a rare milker, though I believe this is not a popular cross. Feeding during gestation is very important. Plenty of good moist food and warm quarters help very much. The present demand seems for Toggenburgs, but they are not so good in winter as Nubians. The Nubians keep in milk a long time, and give rich milk, and are more to my fancy generally.

9.—I do not consider a goat profitable unless she gives 4 pints at second kidding, and keeps it up for six months. After that she may drop to a quart, though I have goats that give 6 pints at kidding, and 3 pints at the end of ten months; but they are exceptional, and not the rule. For three months in the summer I got 13 pints per day from two Anglo-Nubian Toggenburgs.

10.—£5 upwards at the present state of the market.

11.—First, a good appetite, and, as a rule, a disagreeable or, more like, a masterful disposition; a good-sized barrel, good hips, thin neck, and a straight back, and to individuals a tame and peaceful attitude—a rather contradictory statement, perhaps, but about true.

12.—Opinions vary very much, and it depends entirely upon the animal. If robust and getting plenty of milk, nine months; if small and not strong, eighteen months. I once had a kid that was mated at six months, and was sucking the dam when she kidded at eleven months old. She reared a fine kid, and at the end of ten months gave nearly a quart a day; but this early mating I do not advise. By feeding heavily and keeping in touch with a male, it is possible to get milk all the year round, by mating at all times of the year, though a goat will milk a full twelvemonth if well looked after and kept in health.

13.—About six years of age there is a heavy fall in the yield, as a rule, though there are many exceptions.

14.—In my district there is no demand for milk or kids for killing. I can sell kids for stock at prices from £2 to £10, when fit to wean. I let my kids run with the dam as long as possible, tying up males when troublesome, and feeding night and morning from the mother or a foster.

15.—The demand is for hornless stock. They are less trouble, and get into less mischief with fences, etc., though personally I do not mind much ; but ladies will have them hornless.

16.—There is no doubt that goat's milk is much preferable to cow's for infants—even here, where the goat is so very unpopular. I have several instances of the immense benefit derived from its use for rearing infants ; and the heavy demand for goats for this purpose demonstrates it very fully.

17.—In the ordinary way there is no flavour that makes it objectionable. If allowed to roam and eat herbs, roots, and anything they come across, it does sometimes taste, and particular animals sometimes give milk with a flavour which is unexplainable. In many cases, however, it is fancy or prejudice.

18.—Feeding for milk is a study that must be learnt by the owner, he watching the animal's fancy, and feeding accordingly. Plenty of good moist food, sloppy dishes, and green food *ad lib.*, and comfortable housing all help the yield.

19.—In starting goat-keeping, get a sound-bred animal, out of profit ; mate it, and feed well, and be patient and kind to it. When you are acquainted with its needs and requirements it will be advisable to have three, and they should keep the house all the year round. In the country it will require a

paddock. In the town it will be stall-fed. Personal attention is everything.

20.—Disease should be unknown, but it is unfortunately not. The peculiar disease of goats is a wasting away, caused by improper food and lack of attention. Scour is the great enemy, caused by damp, constant pasturing on the same land, etc.

21.—Very few things are harmful to goats; chiefly rhododendrons, yew and privet at certain times of the year; but, as a rule, few goats eat harmful things if receiving proper attention.

22.—First mate with a sound pedigree male. Keep the stock in health during the period of gestation. Care must be exercised that the females do not receive any sudden fright, as they are very liable to miscarriage, which is easily caused by being chased or put about in any way. Keep the male away all that period. He will do no harm when they are not with young.

23.—Goat-farming is a commercial possibility, but must be on a large range, and the goats must be constantly changed from one pasture to another, or kept entirely stall-fed all the year round. Or run them out with a man or boy over rough tract of land or down lanes, arranging for change of stock and occasional grazing on fresh land.

24.—Arrangements ought to be made for the regular importation of sound males for bringing our stock to a higher state of perfection. Our ordinary English goats are not equal to the foreign for milk production, and it is only by judicious mating and careful study that we can produce goats that pay for breeding. Our country is suited to goat-keeping, and the majority of people could keep them profitably and pleasurably if they would throw away prejudice and look at the matter from a business standpoint.

GORDON HAWORTH, ESQ.

(GOAT-KEEPER FOR SEVEN YEARS)

1.—High Lawn, Bowdon, Cheshire.

2.—In the country.

3.—At the present time I have no goats, as I am looking for a farm; but up to recently I had one good stud billy (Lord Inverclyde), three to four good nannies (different ages), and about four kids—all Toggenburgs and their crosses.

4.—I made a good useful shed to hold four goats (that is, tied up), with a mixing room (food), a box for a billy at one end, an open space for kids, etc., and also another box about 12 yards away for nannies in kid or for kids. I very seldom tethered. As a rule, I turned all the nannies and kids out together on a plot of land about one-eighth of an acre, and fed them with greens, cut clover, turnips, etc., on this land, and grass from the lawn when mowed. I put the billy and billy kids on separate land of about the same size. (Land was a kind of loam, with sandy subsoil.) In the winter I gave them all a few cut swedes, meadow hay (chopped), crushed oats, sharps and bran twice a day—at nine in the morning, and at three in the afternoon; hay, meadow or clover, at six, after milking at seven, and again, at eight p.m., bedding. I used oat straw or sawdust. As a rule, I put the kids on the nannies instead of milking.

5.—Garden produce all the year round; grass and clover all the summer; meadow hay *ad lib.* in the winter; crushed oats twice a day all the year round; turnips (fingered), oats (crushed), hay (chopped), bran and sharps, in the winter.

6.—(a) From 6d. to 9d. per week. *Labour* is the biggest item.

7.—They can be kept well on grazing alone, as the first year or two, when I had only two or so, I used always to graze them ; but you must be able to give them a good fresh bite occasionally.

8.—I think a good cross is as good a milker as any, as long as she has been bred for milk.

10.—A good goat, at second kidding, is worth £2 10s. and upwards, according to how she is bred.

12.—A nanny should be at least a year old, and she is none the worse for being eighteen months old, before being put to the billy. Mine were all over eighteen months before being served.

14.—(a) Have never sold any.

(b) Ditto.

(c) Have always kept them until a year old or more.

15.—I have no real preference ; but for grazing in a field I should have all goats with horns, as they can protect themselves better against dogs.

18.—I believe in plenty of good green food or other succulent food to keep up the milk-supply ; give them a bit of corn and hay, as well as plenty of cabbage, turnips, carrots, etc., and the milk-supply should keep up well.

19.—(a) If I was starting goat-keeping, I would buy a good nanny with a good kid (nanny) for preference, and rear the kid ; or buy a nanny second kid and a young nanny, and serve it to kid about six months after with the first kid.

20.—None ; only lost one goat, and that through old age.

23.—I do not think there is much possibility of making a profit out of goat-farming, unless you can sell all the kids you rear for about £2 after they have the second kid. You want to have a stone-walled country, land pretty dry, and about 10s. an acre rent at the most.

HENRY C. STEPHENS, ESQ.

(GOAT-KEEPER FOR SEVEN YEARS)

- 1.—Cholderton, near Salisbury.
- 2.—In the country.
- 3.—Twelve Toggenburgs; a few Mohair (Angora) goats.
- 4.—Never house the goats, summer or winter, and we always let them run loose in folds.
- 5.—Grass in the summer, and crushed oats, bran, and hay in winter.
- 6.—Cost of feeding depends on whether you produce the feeding or buy it, but 4d. per week would be a fair amount in the country.
- 7.—In late spring and summer months milk could be produced without feeding.
- 8.—I do not consider that any breed has a preference over another in milking propensities. I think individual goats in all the breeds vary considerably, but the Toggenburgs are carefully selected for milking capacity.
- 9.—(a) 1 quart per day.
(b) 2 pints per day.
- 10.—Demand and season of year would determine price, but it might range from £1 to £4.
- 12.—One year old. Get your nannies to kid in January and June.
- 15.—Hornless. You can keep them closer, and they do not butt each other as much as goats with horns.
- 16.—There is no question at all about the much better digestive quality of goat's milk for infants and any persons with enfeebled digestion, the smaller cream particles being a probable reason.
- 17.—Have known people who dislike goat's milk, but there is no reason to have any objectionable

flavour if goats are kept clean, milked in open, and their bags thoroughly washed and dried before milking. Where goats are properly tended the soft character of goat's milk induces most people to prefer it ; but cleanliness is indispensable.

20.—As we keep our goats under healthy conditions, we have no disease.

24.—We think it would be of advantage to allow the importation of goats for stud purpose under strict quarantine regulations. At present Toggenburg and Mohair goats are woefully in-bred. I am obliged to give up Mohair goats for this reason. It is an oppressive absurdity, as quarantine is amply protective.

A NOTE ON THE WOOL GOAT

The demand for mohair is increasing with much development in the use of it for admixture in a variety of fabrics. The Sultan of Turkey has prohibited the exportation of Angora goats, and the Parliament of Cape Colony, in their judgment of what is desirable for their own Angora goat industry, has decided to prohibit the exportation of the Mohair goat, with the avowed object of acquiring a monopoly in mohair production. In his work on "The Angora Goat," published under the auspices of the South African Angora Goat Breeders' Association, Mr. Cronwright Schreiner gives a description of the climatic and soil conditions of Angora, which, with little variation, would serve for a fair description of Salisbury Plain itself ; and with reference to the immediate vicinity of the town of Angora, Mr. Schreiner quotes Captain Conolly, who says : "The greater part of the area described above consists of dry chalky hills."

So far as acclimatization merely is concerned, I have had considerable success. In my own case I commenced in 1893 with two Angora ewes and a ram imported from the Cape, the animals being prizetakers there, and I have now—January, 1900—about twenty, all healthy, never indoors except in the hardest weather, and in winter and summer folded by hurdles on Salisbury Plain, precisely as sheep are in that district. The result, so far, is that the first, and still more the second, generation of Angoras bred at Cholderton appear larger and more robust than imported ones.

Upon the evidence offered by comparing the fleeces of the second generation born in England with that of a good specimen of Turkish-born Angora, their fleeces do not as yet appear to have lost in quality, while in quantity the English-grown mohair seems not to have deteriorated. The fleeces are certainly much heavier. I have several fleeces of 10 pounds weight and one of over 14½ pounds. The average over all is above 5 pounds.

There is certainly support for that assumption in the fact that the two domesticated varieties of goats so freely inter-breed. However, for practical purposes, especially with regard to utility and convenience to man, the two divisions must be regarded and dealt with apart—the wool-bearing goats for mohair production; the milch goat for milk production. Efforts directed to combine both wool production and milk secretion in one breed of goat must prove disappointing.

HORATIO RUTTER FILLMER, ESQ.

(GOAT-KEEPER FOR SIX AND A HALF YEARS)

1.—22, Harrington Road, Brighton.

2.—In town.

3.—I have now only a pure-bred Toggenburg nanny, six years old, and a half-bred goatling, daughter of the other.

I have had Anglo-Nubian and (so-called) English goats.

4.—My goats are kept in houses about 6 feet square, built as a lean-to on the south side of a brick wall, with a run some 30 feet long by 6 feet wide in front of each house. There are three such houses adjoining. The runs are formed of stout sheet netting, galvanized, and there are double gates between the runs and the garden. The doors of the houses are kept open, except during winter nights, and the goats go in and out at pleasure. There is a wide "veranda" in front of the houses, formed by the iron roof projecting about 6 feet over the run. The goats are occasionally allowed to run in an enclosed grass chicken run (not much used for chicken), but otherwise never leave their own runs.

5.—*For Goats in Milk*.—A pint of good white oats and a pint of bran, mixed, each morning, and the same quantity each night.

For Dry Goats in Kid.—Half the above allowance.

For Billy-goats and Goatlings not in Kid.—A quart of bran a day, but no corn.

For all goats, potato parings, pea-shells, cabbage leaves, pea-haulm, grass cuttings, prunings of fruit-trees and shrubs (except privet), and the produce of a small plot of lucerne. Make up with hay, of which the goats in milk receive as much as they will eat.

In winter and early spring goats in milk have also mangel or carrots, washed and cut up.

6.—In the town, probably about 2s. per week.

7.—My experience is that goats do not care very much for grazing, except when the grass is young and fresh in the spring. I took my goat into the country for the month of August last, when she was tethered in the grass each day. She had, in addition, her usual allowance of oats and bran, but she went off greatly in her yield, which nearly doubled after her return home.

8.—Undoubtedly Toggenburgs. My nanny will give 5½ pints of milk when at her best ; and now, more than six months after kidding, she is giving 3 pints.

9.—A profitable goat ought to give 2 quarts a day after her second kidding, but they will sometimes continue to improve each year for some years longer.

12.—A young nanny born in March or early April, if forward and well grown, may with some advantage be put to the billy the next January. She would kid in June, and should be stocked again in October, and dried off as quickly as possible afterwards. If at all backward or small, the young nanny should not be stocked till the second October after birth.

14.—(a) Have never sold any.

(b) Ditto.

(c) Pure Toggenburg nanny kids sell readily for 30s. if hornless, or 25s. if horned.

11.—I prefer hornless goats, because they are safer with children, and not so destructive to wire-netting.

16.—Yes. There is no risk of tuberculosis, and you know that the milk is clean, fresh, and free from preservatives and other impurities.

17.—The flavour is not usually noticeable unless the milk has been kept in a covered vessel, which should not be done.

18.—I think that plenty of good food and careful milking are of more importance than the precise nature of the food.

19.—A good milker costs no more to feed than a bad one, and the cost of food is a much more important factor than the first price of the goat. It is therefore the best policy to buy a really good goat, even if a comparatively high price has to be paid for it.

20.—I have had at different times seven or eight goats, besides kids, but I have never lost but one from disease, and that was a nanny about three years old, which contracted pneumonia, and had to be killed under the orders of a vet.

21.—I am told that privet and rhododendron are harmful to goats, and have therefore never given them to mine. I have never known the goats to be injuriously affected by any food, except by a too great quantity of *damp* green-stuff.

THE HON. IRIS MITFORD

(GOAT-KEEPER FOR SIX YEARS)

1.—Batsford Park, Moreton-in-Marsh.

2.—In the country. They are kept entirely for the use of cottagers with large families, or those living at a distance from villages.

3.—Eight goats, aged from two years upwards, and seven goatlings.

They are English, Toggenburg, and Nubian ; all the younger ones are of Nubian crosses.

4.—During the winter months, and when not in

milk, they are kept here in a very large field ; at night they are turned into a paddock, in which there is a big warm shed. As soon as they have kidded they are sent out to the different cottagers (when-ever possible the same goats are given back, as they are always made great pets of). In most cases they are tethered by the roadside during the day, and brought in at nights to an outhouse or shed. In the early spring and autumn the cottagers are expected to give them two feeds of mixed corn ; hay is provided in most cases. During the summer months they get nothing but grass and garden stuffs, except in the rare cases of their not being able to be tethered. When this happens the children always take the goat out for one hour or one and a half hours in the evening along the lanes for exercise and green food.

As goatlings, or when needing change of pasture they are taken to the outskirts of a large wood where the soil is very light and the pasture not so rich as up here.

8.—I think that good milkers depend upon the strain and breeding more than on special breeds. In this case the Nubian breed is preferred, as they are stronger than Toggenburgs, and seem more fitted for this soil.

9.—Two quarts a day for the first two to three months, gradually dropping to 1 pint or $\frac{1}{2}$ pint in the late autumn or December, has been the average here. There was one goat which gave 1 gallon a day—she was a Toggenburg—but, of course, this was an exception, and 2 quarts a day is as much as is needed in a cottage household.

12.—At eighteen months old.

Up to the present only one goat has been got to kid in the autumn, for milking in the winter.

14.—As the goats are only kept for the use of

cottagers, no milk is sold. The billy kids are given away for eating purposes at one month or six weeks old.

15.—Hornless. They are much more gentle, and, of course, much safer where there are children.

16.—In three cases, I think, that by giving a goat, infants' lives have been saved, and certainly in all cases the children look better for the milk.

17.—If properly fed, goat's milk should have no flavour.

23.—I am quite sure that goat-farming could be made to pay, but cannot give any views, for, as I said before, goats have not been kept here for profit.

MR. AND MRS. RUSHTON ABLETT

(GOAT-KEEPERS FOR FOUR YEARS)

1.—Hill Crest, Coombe Hill, East Grinstead.

2.—In the country.

3.—Four milch goats and four kids—English and Anglo-Nubian.

4.—The goats are housed at night, both summer and winter, in a house built on the plan given in Mr. Holmes Pegler's "Book of the Goat," each animal having its own stall, manger, hay-rack, and water-bowl, each goat standing on a wooden grating. The house is brushed and washed out every morning, ashes being afterwards brushed over the floor in order to dry it, and then removed; this plan leaves the floor quite dry. Once a week the mangers, gratings, and milking bench are thoroughly scrubbed.

During the day in summer, and when not raining, the goats are tethered out in a field on chains and iron tethering-pins, the chains being from 12 to

14 feet long, and are provided with swivels to prevent kinking of the chains. Each goat wears a leather collar, to which is attached a chain 12 inches long with a spring-hook on end. When out the hooks are fastened to tethering chains, and when in the house are hooked to the ring, which is free to slide up and down a rod which is fixed between the hay-rack and manger. When out the goats are moved at least twice a day.

5.—During the summer the goats are fed mostly upon grass, either on the tethering plan, or by the grass being cut and fed to the animals in their stalls during very hot weather or in the evening. At milking time they have a handful of corn, one of bran, also some linseed-oil cake broken to a small size. In the winter, being housed all day, they are fed at 7 a.m., 12 noon, 4 p.m., and 8 p.m., and the food is varied as much as possible, consisting of hay, cabbage leaves, acorns, dry bread, bread soaked in boiling water, and mixed with sharps or middlings, raw potatoes cut up and dusted with sharps, boiled potatoes mixed with bran and salt, bran mashes, bran and crushed oat mashes, swedes cut up and dusted with sharps, mangolds, and turnips, etc. Everything is given the goats absolutely clean; their mangers and bowls are always kept as clean as possible.

6.—The total cost for food for twelve months for feeding five goats, two lambs for five months, one lamb for four months, and three kids for five months, was £7 11s. 6d. This does not include hay, which is grown on the property; but where hay is purchased the cost of a milch goat in food per week should not exceed ninepence.

7.—Twenty-five per cent.

8.—Milking powers are more a matter of breeding from heavy milkers than breed.

9.—Five pints to 1 gallon daily from three milkings. I have a goat two and a half years old, which kidded last April for first time, and gave, when in full yield, between 6 and 7 pints daily. This is, I think, an unusually heavy yield for a first kidding. This goat is now giving over 3 pints, and has been in milk six months. Another goat I have is giving between $2\frac{3}{4}$ and $3\frac{1}{4}$ pints daily, and has been in milk over sixteen months.

10.—Five pounds, or possibly more ; if in herd-book considerably more.

11.—A large-framed animal, with a small head ; a good feeder ; a large udder, soft and pliable, and not fleshy.

12.—Eighteen months, but depending upon whether the animal has finished growth. A quick grower would possibly be ready for mating at fifteen months.

By breeding at different times of the year a supply of milk can always be obtained from two or more goats all the year round.

13.—Have no experience under this head, but have one goat ten or eleven years old now giving from one teat only (the other being useless from garget) 3 pints daily.

14.—(a) No demand for goat's milk in this district, but for a short period 3d. per pint was obtained.

(b) Have sold no kids for killing.

(c) Two to three guineas if from heavy milking strain.

15.—Hornless : less liability to hurt each other, and easier to handle when confined in stalls.

16.—Goat's milk is better for children and invalids than cow's milk, and I know of one case where a lady was unable to digest cow's milk in any form experiencing no difficulty in assimilating the milk from the goat.

17.—Short-haired goats kept under proper conditions do not impart any disagreeable flavour to their milk.

18.—Feed with sloppy food as much as possible ; regularity in feeding ; giving last feed at 8 p.m.

Milking three times daily as long as a goat will give 4 pints.

19.—(a) Procure the best possible milking strain, and do not keep more than two or three until experience is thoroughly gained as to treatment, etc.

(b) Goats can be kept practically as well in the suburbs as in the country, but it is advisable to exercise in an enclosed yard.

20.—The only disease experienced is hoove, easily treated by a dose of 1 drachm of chloride of lime given in $\frac{1}{4}$ pint of warm gruel. In such cases withhold too liberal feeding of wet grass or very succulent green food. Plenty of hay is a good corrective.

21.—Yew, privet berries, and monkshood.

23.—Exclusive goat-farming is dependent upon the market for milk and sale of kids. If there is a demand for milk at 4d. per pint, and the kids can be sold, then the industry should be profitable ; but, in my opinion, goat-farming should be followed in conjunction with market-gardening, pig and poultry keeping.

24.—If horses are allowed to leave and enter the country, and are subject to various forms of disease, I fail to see the reason why the Board of Agriculture should exclude goats from a like privilege, when they are considered immune from contagious diseases.

NOTE ON THE ARTIFICIAL FEEDING OF KIDS

Our goats' kids are always brought up by hand, one of Maw's patent feeding-bottles being used for the purpose. For the first three weeks they have

pure goat's milk, and from that time artificial food is mixed with the milk in gradually increasing quantities, till, at the end of eight weeks, artificial food alone is given. The foods given are linseed tea, peameal broth, and oatmeal gruel. They are bottle-fed till three months old. They are fed four times a day, and are given three pints a day each as soon as they can take it. They also have crushed oats, hay, and bran as soon as they are old enough to eat, and, of course, are out in the field for the grass if the right time of year.

THE DUCHESS OF HAMILTON AND BRANDON

(GOAT-KEEPER FOR THREE YEARS)

1.—Hamilton Palace, Hamilton, N.B.

2.—Principally in country, but kept a couple in London when children were up for a month.

3.—Have three Toggenburgs and one Dutch nanny, one Anglo-Nubian billy, three Anglo-Nubian nanny goatlings, two Nubian-Toggenburg nanny kids, and one Toggenburg billy kid.

4.—Consider they do best in loose-boxes, with bench to sleep on, but will take up less space and do well in stalls. If tethered, should be moved frequently—once or twice a day at least.

Goats should always be dealt with with patience and kindness; are nervous animals, and do not like strangers to handle them.

5.—In winter my goats have most food—a mash once a day; hay, oats, and bran at the other meals. Should be fed little and often, and do not like stale food.

6.—Cannot say exactly, but in town or in winter about 3d. a day, or less, according to grazing.

7.—To very much the same extent as cows. They do best at liberty in rough grazing, as long as land is well drained, in the summer ; they must be fed in autumn, winter, and to a certain extent in spring.

8.—The Swiss breeds seem to be the best milkers and hardiest, but milking powers are probably principally a matter of breeding in the right strain.

9.—(a) Two quarts at least.

(b) Above, gradually decreasing to about 1 quart or $1\frac{1}{2}$ pints.

10.—This would vary according to pedigree. From £4 10s. upwards.

11.—A good-shaped udder and a nice healthy appearance of goat.

12.—Not before eighteen months.

If you get a really good goat, she will be in milk the whole year. I have had one which gave milk for two years on end, still gave 1 pint, and was with difficulty dried off.

15.—Infinitely prefer hornless, as the horned ones knock the others about, and are able to eat most of the food if feed together ; also they nearly always butt people and children.

16.—All my children have had goat's milk, and have done very well on it. It seems to digest better than cow's.

17.—Not the slightest if goats cleanly kept.

18.—Grass, especially on rather poor ground, is the most productive of milk. When grass cannot be had, I think there should always be one bran or meal mash a day.

20.—One of my goats has died of heart disease ; another, just bought, of extreme anæmia.

21.—Rhododendrons seem to disagree particularly, and goats are rather fond of them.

23.—There seems to be a great demand for goats in milk. The production of these should pay.

24.—Goats being apparently animals but little prone to disease, it seems a great pity that there are so many difficulties in the way of importing fresh goats of good milking strain to improve the stock in this country, since an acclimatized good milking goat should be a priceless boon to those who cannot keep a cow.

A SUSSEX GOAT-KEEPER

(HAD GOATS FOR THREE YEARS)

2.—In the country.

3.—Thirteen females and two males: one male Anglo-Nubian, Vasterni Viscount (S.G.B.); one male Toggenburg, Loxwood (F. Came); one pure-bred Toggenburg female; two seven-eighths Toggenburg; one half-bred Toggenburg; one English; one Anglo-Nubian; one Anglo-Nubian Toggenburg; two three-quarters Anglo-Nubian Toggenburg (kids); one pure Toggenburg kid; three Welsh, or Anglo-Welsh, for supplying house.

4.—My goats are housed in winter, tethered out in summer, from May till October. My goat-house is carried out on Mr. Holmes Pegler's principle (*vide* his "Book of the Goat")—that is, each goat has its separate stall; and, in addition, there are four loose-boxes for goats to kid, and for kids. There is a rack for hay, under which is a feeding-board, with holes for feeding buckets. There are three windows to the houses, thus giving plenty of light. The house faces due south, and opens into small enclosed yard. The stalls are away from the back wall. This is a great convenience, as food can be given

from behind. It also allows a freer circulation of air, without being draughty.

In tethering out in the summer, I use strong iron pins, with a movable ring at the top, to which the chain (not rope) can be attached. The ring being *movable*, allows the chain and rope to revolve round the pen, without getting kinked or wound up; the chains have swivels and hooks at each end.

5.—*In summer-time* my goats are turned out first thing in the morning to get their own living. They are, however, watered at mid-day, or, if very hot, oftener. If there are any goats in milk, they are milked before going out, and a little corn or maize, with bran, given to each while milked. When they come in they all have hay and water; and those in milk a little corn, as before. (All are brought in at night, except the rough Welsh, who do well out all the year round, except in the coldest days of winter.) They come in about eight o'clock.

In winter, first thing, they all have hay, corn, maize, and bran, first meal. Mid-day: roots or cabbage leaves, bread, biscuits, or anything they will fancy for a change. Evening: hay, corn, maize, bran, etc., about six o'clock.

7.—I do not think, if the yield is to continue, say, for ten months, it is possible on grazing alone. A little corn given occasionally will, however, maintain the yield, though in no great quantity.

8.—I think undoubtedly the better the breed the better the milkers—that is to say, where care has been taken to breed from (a) well-bred stock, and (b) good milking strains of the breed. I believe this is true: that given two animals—say, one Anglo-Nubian or pure Toggenburg, and the other a Welsh or common goat—supposing that each gives at kidding the same amount of milk, it will be found, I think, that the better-bred goat will remain longer

in milk and give more than the other, say, at the end of six months.

9.—(a) A profitable milker should give from 2 to 3 quarts at her second kidding.

(b) Should give a quart or thereabouts at the end of ten months. I have a goat now which has not had any kids certainly for eighteen months, and is now giving a quart a day.

10.—So much depends on the breed. If she is a high-bred goat, kept for stock-getting, she is worth anything from 5 to 20 guineas. If kept only for milking, and possibly without pedigree, from 2 to 3 guineas.

11.—A big drinker, with a big stomach, narrow in front, wide and deep behind; the udder should be soft and elastic, shrinking up after milking. Many goats are almost as big after milking as before—that is to say, the udder is mostly flesh.

12.—Opinions seem to differ very much as regards this question. Some of the principal breeders are mating earlier than they used to do, but it generally depends on what you are breeding for: if for prize stock, then I should say don't mate till fifteen or eighteen months, and in any case not before ten months.

15.—I prefer hornless—not because I think they are in any way better, but because one can with more safety turn out goats together, for they are not so likely to do each other damage.

16.—I certainly find it better for children. I use nothing else when I can supply the house, and all my family greatly prefer it to cow's milk. Indeed, one of my children has very greatly improved upon it.

17.—No, if used fairly fresh; it does not keep quite so well as cow's milk.

18.—Feed with as much sloppy food as the goat can be got to take and is good for her, and plenty of water.

19.—If a man in the country wishes to start goat-keeping, and he does not wish to lay out any great amount in goat-houses, etc., he had better purchase animals that are used to roughing it—that is, that are turned out all weathers, with perhaps a shed to run into in case of wet. If he only wants his goats for milk, he should buy three—two to kid in the spring, and one, if possible, in the autumn or late summer. He then is pretty certain to have a fair supply in the winter months, while the two spring kidders will give him a good quantity during the summer, when he will most want it. Of course, if he does not mind the expense, and wants to make a hobby of it, let him put up his goat-house, purchase Mr. Holmes Pegler's "*Book of the Goat*," and put himself into the hands of Mr. Woodiwiss for goats. He may pay highly for his stock, but he will find them most interesting, for pure-bred stock is always more interesting than rough stuff, of whatever animal it may be.

20.—I am glad to say none, except ordinary colds and bronchitis, which is bad enough. If you have a very bad case of bronchitis, a good thing is, if the goat has a difficulty in breathing, to tie a bag over the mouth filled with steaming brewer's grains. Of course, the bag should be ventilated, else the animal will get choked by the steam, and the cure be worse than the disease.

The grains should not, of course, touch the animal's nose, but lie at the bottom of the bag.

22.—(1) I believe the selection of the male, as coming from a good milking strain, is as important as the female.

(2) I have been told by an old goat-breeder that using a very young male is generally productive of billy kids.

(3) To get females in season, place them next to

one that has just been served ; also let them have some ivy to feed on.

23 —I do not think the time has yet arrived for goat-farming. I do not believe there is a ready market for milk ; but I do think that possibly in the future, thanks to articles such as you propose to write, people will get to know more about the value of the goat's milk, and that the foolish prejudice that so many ignorant people have against it will be done away with, and so in time it may become sought after, especially in children's hospitals and institutions ; then will be the time for goat-farming.

F. JARVIS, ESQ.

(GOAT-KEEPER FOR TWO AND A HALF YEARS)

1.—Hainault, Hornchurch.

2.—Country.

3.—Six Anglo-Nubian and English.

4.—Separate stalls in well-ventilated, dry, rough stable ; tethered to iron stakes, with 10-foot chains from 8 a.m. to 6 p.m., as a rule ; shifted to fresh ground at mid-day. Not left out in wet. In stable they stand on gratings, not too long, so that droppings do not soil them. Well brushed each morning ; bag washed weekly, as a rule ; hoofs pared as required.

5.—Each meal, when milked : 1 pint mixture (1 crushed oats, 2 beans) ; 1 pint clover chaff added occasionally. In winter $\frac{1}{2}$ pint maize as a change, and small portion of cake. Green food, as much as they will eat, night and morning ; clean swedes, mangolds, etc. As much hay and sainfoin mixed as required winter and summer. Bran—1 pint to

1 quart—wash in cold weather, or if any appear a little out of sorts. A pinch of Epsom salts occasionally, if green food is scarce or not eaten readily.

6.—Taking the year all round in the country, 10½d., without charging for pasture or green food from garden.

7.—Have not tested this. Other goat-keepers here appear to get a fair quantity of milk by grazing alone; no doubt this would depend upon description of pasture: plenty of weeds, dandelions, etc., and hedge grazing would assist milk production.

8.—Anglo-Nubian and Swiss crosses, so far as I have seen, are the best for quality, Toggenburg and crosses for quantity. I should say breeding for milk the better plan.

9.—My figures show:

(a) About 3 quarts daily.

(b) About 330 to 350 quarts in ten months.

10.—£2 10s.

11.—Neat head, smallish muzzle, well-sprung ribs, deep body, soft udder, not too much tucked up.

12.—Fifteen to eighteen months.

No, except kidding some as late as possible.

14.—(a) Fourpence per quart. No demand in this district.

(b) None sold.

(c) In market 2s. 6d. for billies; 3s. 6d. for nannies. Private sale—nannies two months old, 7s. 6d. to 10s. No demand for good kids or goats.

15.—Hornless, as they are not so pugnacious, are safer with children, do less damage in stable and to fence, and, according to my small experience, are better milkers.

16.—For children I have proved it is very much superior in every way.

17.—I consider proper attention to cleanliness of

goats and utensils prevents this. The milk, particularly after kidding, is sweeter.

Milk not used up within reasonable time develops the "goaty" flavour.

18.—None, except give plenty of dandelions and other weeds of as mixed description as possible, and fair quantity of good crushed oats—bulky food, but not rich.

20.—None that I can make any remarks upon.

24.—Under proper regulations, I consider the importation of goats should be allowed.

THE HON. ROSE E. HUBBARD

(GOAT-KEEPER FOR TWO YEARS)

1.—Seven Gables, Winslow, Bucks.

2.—In Bucks.

3.—Ten Anglo-Nubian and three British.

None. I had one Toggenburg, but found the milk much poorer than that of the Anglo-Nubian, and she had such a disagreeable odour that I parted with her.

5.—In the summer grass only, with a handful of oats at milking-time to keep them quiet. In autumn and winter the grass they are able to obtain when out for the finest part of the day is supplemented by hay, carrots, mangolds, and any green stuff from the kitchen garden which they will eat, together with crushed oats, and occasionally a small quantity of oilcake.

9.—(a) At her second kidding from 2 to $2\frac{1}{2}$ quarts per day.

(b) From $2\frac{1}{2}$ to 3 quarts.

10.—Five pounds.

11.—Deep ribs, narrow chest, high hips, broad behind, soft, pliable udder, feminine expression.

12.—Not before eighteen months.

Feed well, milk regularly, strip thoroughly.

14.—(a) No sale.

(b) No sale.

(c) Ten shillings at three months if of pedigree.

15.—Hornless ; safer.

16.—Greatly prefer it.

17.—Some people are prejudiced. I think goat's milk is a trifle sweeter than cow's, but if proper attention is paid to cleanliness there is no special aroma.

18.—I believe in crushed oats, bran, and warm water in winter.

20.—In case of diarrhoea give some acorns—a handful twice a week.

21.—Rhododendron, laburnum, yew, and privet.

22.—Do not ask any goat to rear three kids ; two even is often one too many. I had a nanny's teats nearly broken off by her twins.

A NOTE ON EIGHTEEN MONTHS' EXPERIENCE OF GOAT-KEEPING

(The following letter of mine appeared in
Country Life, August 12, 1905)

Eighteen months ago I began to keep goats, under the impression that there might be some profit in farming a small herd. I purchased four so-called Anglo-Nubian nanny goats, three believed in kid, and one with male and female twins, at 50s. each. To these I added, a month or two later, another goat in kid, without pedigree, at £2 10s. Then I became a member of the British Goat Society and attended the Dairy Show. There I inspected the animals, and looked round for a possible purchase.

The "Toggenburg or other Swiss and Alpine breeds" were for the most part "not for sale,"

and such as were offered were priced from £21 to £31 10s., the "Anglo-Nubians and other hornless she-goats" from £10 10s. to £15 15s., and here again the best animals were not for disposal. In the class for "Goatlings under two years old," and, of course, not in milk, several were not for sale, and the prices of the others ranged from £21 to £52 10s. In the class for "Female kids, any variety, under a year," most of the exhibits were reserved, and the others were offered from £15 15s. to £31 10s.

Being very desirous of commencing my goat-farming in the best possible manner, I prevailed upon one of the exhibitors to part with a pure-bred Toggenburg goat in milk, and to mate her to a pedigree male of the same breed for £11 11s. I also purchased a beautiful brown Anglo-Nubian goatling about eighteen months old for £7, although she was reserved and not offered for sale in the catalogue.

I got my animals home, and erected a very pretty little house, like a miniature cow-shed, which I reckon cost me about £15. I wrote to the various London dairy companies to inquire if they would buy the milk of my flock. The answer from all was as follows: "We thank you for your esteemed inquiry, but we are unable to take a supply of goat's milk, and we regret, therefore, we are unable to make you an offer for the milk produced by your goats, as we hardly ever get an inquiry for it."

The further history of the flock is as follows: I sold two of the first consignment of the Anglo-Nubian nannies at the price I gave for them. The third proved barren, and had several changes of air to various parts of England without bringing in profit; finally she was consigned to the lions at the Zoological Gardens, London. Number four Anglo-Nubian produced two kids in fifteen months; all were males. The first died from an accident,

“deeply lamented”; the other was made into soup for my kennel of toy dogs, as I was anxious to secure the milk of the mother for my household, and finally sold her for 45s., as she was ugly and a poor milker.

My household strongly objected to goat's milk, until, by skilful juggling with cans and jugs, I conclusively proved it could not be distinguished, when fresh, from cow's milk. My Pomeranian puppies highly approved of the milk, and thrive well upon it.

The unpedigreed goat at 50s. was the most successful of all my purchases; being a persistent mother of sons only, we ate her firstborn, which was quite equal to inferior lamb, and nearly equal to fawn. This goat milked exceedingly well, producing between 2 and 3 quarts for quite nine months, and being milked twice a day. She last month produced three more sons, who are very pretty and very happy, but unfortunately unsaleable, owing to their sex. They will, therefore, in due course, probably be shared between my household and the dogs, at the value of 5s. to 6s. each.

The pure-bred Toggenburg was so highly perfumed that I was thankful to send her back to her original owner for £7, the market value of Toggenburgs having apparently decreased between October and January.

The beautiful pedigree Anglo-Nubian goatling likewise failed to produce a kid, and is still sporting about and growing at a tremendous rate, untrammelled by any domestic duties; she leaps like a deer, and alarmed me dreadfully when I went into her stable by flying out of a window, about 1½ feet square, right over my head.

My goats have destroyed every tree within reach, climbing up into the branches, and eating the leaves, twigs, and bark clean off. They are very amusing, and as mischievous as monkeys, getting

exceedingly tame, and trying to get into and out of all sorts of places, with a singularly nice appreciation of what is likely to vex their owner. I have tried tethering them, which answers fairly well if the boy in charge can be trusted to shift the tethering pin to give fresh ground, and water, sun, and shade as required. But it seems to me that the goat fancy in this country is not an industry or a profitable branch of farming, but rather a hobby—almost a monopoly—of certain amateurs who think nothing of paying as much for a goat as for a first-class shorthorn or Jersey cow. There is practically no call whatever for goat's milk or goat's flesh. The goat is good for small householders or individuals placed in appropriate surroundings, and kept only for home supply.

APPROXIMATE BALANCE-SHEET FOR ONE YEAR.

Expenditure.

	£	s.	d.
Purchase of four Anglo-Nubian goats at 50s. each ...	10	0	0
Collars and chains	1	1	0
Travelling expenses	1	0	0
Tethering pins and ropes	0	11	9
Fitting up house... ..	15	0	0
Toggenburg goat	10	10	0
Fee to pedigree sire	1	1	0
Travelling	0	19	6
Anglo-Nubian goatling	7	0	0
Fee to pedigree sire	0	5	0
Travelling	0	8	9
Two female kids at £1 each	2	0	0
Travelling	0	18	9
Purchase of cross-bred goat	2	10	0
Travelling	0	3	6
Purchase of young male goat	0	14	6
Travelling	0	4	8
Food for a year—hay, corn, etc., about	9	10	0
Grazing at 6d. a head per week for six goats	9	0	0
Attendance (per annum) say	5	0	0

£77 18

Receipts.

					£	s.	d.
Sale of two Anglo-Nubians at 50s. each	...	...	...	...	5	0	0
Toggenburg goat resold	...	...	...	...	7	0	0
Barren goat <i>ad leones</i>	...	...	...	...	0	11	0
Goat sold in milk	...	...	...	...	2	5	0
Two female kids resold at 30s. each	...	...	...	...	3	0	0
Young kid eaten in house	...	...	...	...	0	5	0
Value of milk—700 quarts at 3d. per quart	...	...	...	...	8	15	0
Value of goats in hand (mother and three sons, pedigree Anglo-Nubian female, and pedigree Anglo-Nubian male)	...	...	...	...	10	10	0
					£37 6 0		

JOHN G. BUCHANAN, ESQ.

(GOAT-KEEPER FOR MANY YEARS)

1.—St. James's Road, Hereford.

2.—At Clun, Shropshire.

3.—My stock usually consisted of four nanny goats, two of which were over two years old, one between one and two, and the fourth a kid.

I started with purchasing nannies out of travelling Irish herds which occasionally came through the village, and although I have often heard this breed decried, I must say my experience of them was on the whole a fairly satisfactory one. Being blessed by nature with something of an eye for live stock, I nearly always picked out animals which proved to be good milkers, giving 2 quarts daily when in full milk. The drawback to these goats, from my point of view, was that sometimes the goat I wanted was horned, and I preferred hornless, and their long hair which gave too much trouble in combing and dressing. So I drifted to and remained faithful to Toggenburgs until I had to relinquish my "goatery."

4.—I began on the tethering plan, but soon gave

that up, and adopted the stall-feeding system, as recommended in Mr. H. S. Holmes Pegler's book, third edition.

My goats were fed and watered at regular hours, all surplus food after the meals being taken away. No goat had any corn unless it was in profit or ill, and they were all regularly groomed.

In the summer months I used to occasionally tether them in a paddock near the house, but more for the pleasure of looking at them than for their own benefit, as they never appeared to want to come out of their house, and I never lost a goat from disease whilst I kept them tied up, except once, and that was a very nice young goat which died within six weeks of purchase, though it appeared to be perfectly well when I had it.

5. My goats were fed entirely from the produce of my garden and paddock, supplemented by oats and bran three meals a day—7.30 a.m., 1 p.m., 7.30 p.m.—all the year round. Tied up, everything came in useful and very little was refused; the coarsest and most rubbishy hay from the hedge-sides was quite as much appreciated as the very best. Ivy cuttings from the house in spring, grass from the lawn-mower, thinnings of raspberry canes, tops from the gooseberry bushes, and heaps of such-like garnerings which would have otherwise gone on the rubbish-heap, were revelled in, and each milking nanny had her handful of oats and bran at each milking.

6.—The cost of feeding is purely relative. Except for the oats and bran, my small stock cost me absolutely nothing in food, and many a labourer living in the country could keep a milking goat on the same terms *if he would*.

7.—If by grazing is meant turning out to graze a field or being tethered in a field, I do not believe

in it, as it doesn't give the animal a fair chance. A goat is a creature that must have variety of food, and must be kept in a contented frame of mind. My experience is that a goat is never contented for very long when kept in a field, and looks altogether out of place there.

8.—I think a clever breeder who goes into the matter can form a milking strain from almost any breed.

9.—A goat that would give me 2 quarts of milk for, say, three months after her second kidding, gradually dwindling after that, I always thought owed me nothing, and most of those I had did it; in fact, I expected it, and drafted any that were not agreeable.

10.—A good nanny goat in kid (second time), apart from any fancy points, should be worth £2 to anyone living in the country where keep can be had for next to nothing.

11.—Small head, lean neck and shoulders, deepish barrell and wide hips.

12.—Fifteen months or so.

I am not altogether a believer in trying to get a milk-supply all the year round from goats kept north of the Thames. It can be done, no doubt, if a quantity of nannies are kept, but I do not think there would be much profit in it, as it would entail too much artificial food to keep up the milk-supply, and this would prove too expensive. In the South of England, where a good green "bite" can be got very early in the year, it would probably answer.

13.—I have never kept a nanny over four years.

14.—I have never tried to sell milk or kids, always using the former and keeping, killing, or giving away the latter.

15.—I preferred hornless, as they were less likely to do harm to children or each other, and for tether-

ing purposes I think hornless are much to be preferred. A horned tethered goat anywhere near a public thoroughfare is a sure and certain allurements for the average village schoolboy, whilst a hornless one would very often be unnoticed and left in peace. It is the horn rather than the goat that seems the attraction.

16.—I have no positive proof that goat's milk is better, but I do know that my children did uncommonly well on it.

17.—Without having kept any regular statistical record, I should say, amongst more or less educated people, five out of ten would not notice any difference, unless it was previously pointed out. Out of those five, one might possibly dislike the flavour, the other five would notice something peculiar, and six out of the ten would like it after it was pointed out; the other three would, out of prejudice, show more or less disgust at having had it palmed off on them.

18.—Succulent green food is the main thing in my opinion, with plenty of variety, and just enough corn and bran and hay to bind it.

19.—I should never advise anyone to keep goats unless he was by way of being an enthusiast.

To entail success the goats must be looked after, fed, groomed, and milked with the greatest regularity, and if one cannot see personally to this, or unless he has some one under him who is equally keen and can be quite depended on, the pursuit is likely to end in vexation of spirit.

20.—I lost several goats when I commenced on the tethering plan, but had no epidemics, and during the whole period of stall-feeding my stock were, with the exception before noticed, absolutely free from disease.

23, 24.—Some very few people can make any-

thing pay, and might make goat-farming pay ; but, in addition to knowing about the animals themselves, this would require keen commercial instincts, which might find a much more profitable outlet in other directions.

The nanny goat ought, in my opinion, to be regarded as the agricultural labourer's cow. There is scarcely a place where an agricultural labourer could not keep a goat or two for next to nothing if he could be induced to do so ; but in the county which I inhabited the prejudice which exists amongst his class against goat's milk is something remarkable, and I am afraid this is not confined to Shropshire. I have often sent out milk-puddings made with goat's milk to poor people, which were much appreciated ; but if I happened to mention the fact that they were made with goat's milk they would be refused with something like scorn and indignation.

24.—If the Board of Agriculture would first of all get rid of any prejudice that exists in its own office (and I am afraid there is some even there), and then endeavour to educate the country children into the principles of keeping goats and other live stock in the proper way, and if the Government would insist on these and kindred subjects being taught in our country schools, instead of the rotten, highfalutin, swollen-head producing, high-standard nonsense, which makes for nothing else but wrong-headed incompetence, there might be some hope for the labourer and the goat.

As it is, I am afraid the goat will only remain as the interesting, profitable, and intelligent animal for the few who can appreciate its merits.

SAM WOODIWISS, ESQ.

(GOAT-KEEPER FOR TWENTY YEARS)

1.—Graveleys, Great Waltham, Essex.

2.—In suburbs and in the country.

3.—About sixty: Alpine, Toggenburgs and Swiss (*i.e.*, cross between these two), Anglo-Nubian, with the common goat crossed with any of these. Have in past years taken goats brought over in the consignments of Cross, the Jamrachs, Hamlyn, and other animal importers—Cashmere, Pigmy (Gulf of Guinea), Somali, Angora, Persian—had, in fact, thirty-two distinct varieties. No good as milkers. With exception of Swiss, Maltese, Spanish, and pure Nubian, I consider our English Herdbook stock as good milkers as any in the world.

4.—I don't tether. All female goats go all over the farm of 250 acres in charge of a boy for the grass and hedges. We have a man going round all the year gapping the hedges. On a wet day they don't go out, but are yarded with access to a big shed. At night two in a box all the year round. Male goats are stalled all the year round. I think billies would be healthier and more cleanly if they had some liberty and were groomed, etc. I am always pressing importance of this on my men.

5.—We feed kibbled oats, cake, roots, bran, green food—chiefly lucerne—and lucerne and sainfoin hay. I'm a believer in bran. Meals: first in the boxes peacefully; second, fed in long troughs in shed in yard; third, all racked up with hay for the night. My goats have oats all the year. We give tree branches where we can get them.

6.—Is. 6d. a week on a farm. Rent, labour, food, and not being able to dispose of milk, make it quite that in my case. It cost me £9 2s. 9d. for corn

and cake last summer quarter. Bran, hay, and mangels are on top of this.

7.—Cannot be kept after the first flush caused by turning out into meadows.

8.—Alpines. Then Toggenburgs for quantity, which is really what we want in England.

Re milking families : have not sufficient data by me at present to give a positive opinion. Am now trying it with the Faith family.

9.—(a) Average quart a day for eight months.

10.—If a quality goat, with size and a good bag, £3. If a coarse, horned, long-haired Irish goat, 25s.

11.—Quality all through ; fine head ; intelligent eye ; lean, long neck ; narrow front ; deep, well-sprung ribs ; broad across hips ; well-placed and developed teats ; plenty of loose leather for the making of an udder.

12.—Eighteen to nineteen months.

14.—No sale now. In September, 1906, I sent it to London at 2s. 8d. per imperial gallon. We are producing about 30 gallons a week now (May). We give it away to the villagers.

15.—Hornless. Not so spiteful when running all together in the yards.

16.—Look at the children in this hamlet who have my goat's milk.

17.—No. I can make my cow's milk taste by feeding the cows in a particular way, say on swedes or cabbage in too great a quantity.

18.—I don't believe there is anything better than kibbled oats and Thorley's dairy cake. Maize only makes goats fat. I doubt if bran mashes will bring milk, bran being a bone-former.

19.—Buy judiciously—*i.e.*, from authenticated milk producers—and buy from people that have a reputation to lose. Give goats pure air, wholesome food, and no draughts.

20.—Yes, unfortunately. They sicken and fall away to nothing. No vet. seems to know anything about the disease. I think the microbe will be found in the blood. Have found no cure. Affected goats are never any good.

21.—My goats, I find, will not eat any plants harmful to them, and they have the range of the farm.

22.—Breed from the best to the best ; it is cheaper in the long run and no disappointments.

23.—No. Goat-keeping is too restricted at the present time. There is no outlet for the milk, and until the ports are opened not enough good milkers in England to think of trying to make it pay.

24.—Obviously we need fresh blood. If we don't get it soon we shall be breeding-in and lessening the productive power of our goats. Breeding-in judiciously is a good thing, but few people know how to do it. The Board ought to do more than it does to encourage goat-breeding. If the man in the street only knew the value of goats, they would be more widely kept.

MILK YIELDS OF GOATS

(From the *British Goat Society's Monthly Circular*, February, 1908).

A prominent breeder is put to needless correspondence by applicants writing to him for goats or animals of good pedigree giving "from 3 to 4 quarts a day." Would-be buyers of such goats should bear in mind that animals like Sedgemere Faith and Sedgemere Capella are very, very scarce, and are not to be purchased. Two quarts a day is as much as can be expected from goats offered for

sale, and when these are Herdbook stock, as generally happens, these are not procurable at prices remunerative to the seller. An ordinary milker gives from $2\frac{1}{2}$ to 3 pints a day.

MILK YIELDS PER DAY (AVERAGE OF TWO DAYS) OF GOATS
COMPETING AT THE DAIRY SHOW, 1907.

(From the *Journal of the British Dairy Farmers' Association*,
1908.)

Name of Goat.	Days since Kidding.	Lbs. Weight of Milk Given.	
		Morning.	Evening.
Sedgemere Faith ...	189	3'95	3'4
Fairy	210	1'4	1'2
Montbretia	244	1'5	1'25
Sedgemere Capella ...	183	4'55	4'0
Wilma Springbok ...	196	2'45	2'2
Nancy	146	2'3	2'2
Sedgemere Louise ...	635	1'65	1'75
Broxbourne Venus ...	200	2'0	2'0
Broxbourne Verne ...	198	1'5	1'15
Druidstone San Toy ...	41	1'55	1'3
Total Yield of 10 Goats		22'85	20'45
Average " "	224	2'28	2'04
		4'32 lbs.	

First prize ... Sedgemere Capella.
 Second prize ... Sedgemere Faith.
 Third prize ... Sedgemere Louise.
 Reserve ... Nancy.

FAT IN GOAT'S AND COW'S MILK.

The average percentage of fat in the milk of the ten goats at the Dairy Show of 1907 was 4·36, the lowest being 3·10 and the highest 7·13.

The average percentage of fat in the milk of the twelve Jerseys at the Show was 5·10. In the case of other breeds the percentage was as follows: Five Guernseys, 4·59; five Kerries, 4·3; eight Dexters, 3·66; thirteen cross-breds, 3·54; eight pedigree shorthorns, 3·56; three Ayrshires, 3·22. Most cow's milk in England is derived from shorthorns and cross-breds.

The comment of Mr. S. Woodiwiss on these figures is that in October, when the Dairy Show was held, goats are at the end of their milking season. Cows, on the other hand, can be got to go to the Show in full milk.

The comment of Mr. H. E. Hughes is that it does not seem possible to get quantity and quality in the same animal.

INOCULATION OF GOATS

THE following summary of experiments of the Tuberculosis Commission in regard to goats is reprinted from the *British Medical Journal* of July 27, 1907 :

"Only a small number of inoculation experiments were performed on goats, but they were sufficient to show that general progressive tuberculosis is readily set up in these animals *when the material is inoculated subcutaneously*. Three goats were inoculated with tissue emulsions containing estimated numbers of tubercle bacilli. One of them, which received four and a half million bacilli, died in fifty-four days from general tuberculosis, the lungs being very severely affected and riddled with small cavities. Another goat, which also received four and a half million bacilli, was killed when apparently well, 165 days after inoculation, but revealed post-mortem a slowly progressing general tuberculosis. The third animal, which received approximately 5,000 bacilli, was killed 161 days after inoculation, and also showed general tuberculosis, but of a much less severe type than in the second animal ; in both cases the intestines and mesenteric glands were tuberculous. A fourth goat, inoculated subcutaneously with 0.17 milligramme of culture, was killed, in apparently good health, ninety-one days after inoculation ; on post-mortem examination the animal was found to have slowly progressing general tuberculosis."

The foregoing is from the first volume of the Report, and relates to the experiments of Dr. Griffiths. In the second volume are published the

records of Dr. Cobbett's experiments on the effects of inoculation of carnivorous and herbivorous animals with tubercle bacilli obtained from human beings. The statement in regard to the goat is as follows: "Only a limited number of experiments were made with the goat, but they are sufficient to show that this animal reacts to the two kinds of tubercle bacilli just as the calf does; in other words, it is capable of resisting serious infection with tubercle bacilli of Group II. (slightly virulent), while it succumbs to bacilli of Group I. (virulent) unless the dose be small, and in that case it develops a limited and non-progressive tuberculosis. . . . Five goats were subcutaneously injected with tissue emulsions containing tubercle bacilli belonging to Group I. All died, or were killed when very ill, and were found to be suffering from general tuberculosis. . . . Two goats were fed with culture belonging to a virus of Group I. They both died of tuberculosis with severe and extensive ulceration of the intestine. The doses were not particularly large (10 and 1 mg.), and this species of animal would therefore appear to be rather susceptible to infection by feeding. [This is interesting in view of the tuberculosis of Maltese goats, which, as has been noted, are allowed their freedom among garbage.—H. C.] With viruses of Group II. four very young kids and three goats were injected, tissue emulsions being used in each case. . . . One of the kids was injected intravenously; the other animals were injected subcutaneously; in no case did fatal or progressive tuberculosis result, and such little tubercles as were found in the glands and organs were translucent and obviously retrogressing."

GOATS AND MEDITERRANEAN FEVER

THE facts about the connection of goats with Malta or Mediterranean fever, which are set forth at length in the three Royal Society Reports (Harrison and Sons), referred to on p. 19, are summarised in an address delivered at the Royal Institution on January 24, 1908, by Colonel David Bruce, C.B., F.R.S., reported at length in *Nature* of May 14. The Commission, after more than two years' investigation into the causes of Malta fever, had reduced the possible means of infection to one—namely, to the *Micrococcus melitensis*. The microbe of the fever gains access by way of the alimentary canal. On feeding experiments being made, it was found that goat's milk—one of the most important food-stuffs in Malta—was the source of the infection. There is one goat in Malta for every ten of the population. According to Colonel Bruce, they "appeared perfectly healthy, and had the reputation of being little susceptible to disease of any kind." "To put the matter to the test," he says, "several goats were inoculated with the micrococcus. There was no sign of ill-health in any way, but in a week or two the blood was found to be capable of agglutinating the micro-organism. A small herd of apparently healthy goats was then procured. Several were found to react naturally to the agglutination test, and this led to the examination and the discovery of the micrococcus in their blood, urine, and milk. Some thousands of goats were then examined, and the discovery was made that 50 per cent. responded to the agglutination test, and that 10 per cent. were secreting and

excreting the micrococci in their milk. . . . Monkeys fed on milk from an affected goat even for one day almost invariably took the disease." The use of goat's milk by the army and navy was at once prohibited, and whereas hitherto there has been on an average about 600 cases of Malta fever among soldiers and sailors in a year, there were in 1907 only seven cases of Malta fever among the soldiers, and no cases at all among the sailors.

It does not seem necessary to make any remarks upon this report beyond what have been made on p. 19. Malta fever is not a disease of this country. Malta goats, as has been stated, are not desired here; and the fact cannot be questioned that in the United Kingdom the goat has secured a reputation for healthiness which is in remarkable contrast with that possessed by the cow. What we have to guard against in our milk-supply is tubercular infection; and we know beyond question that, while cows suffer a great deal from tuberculosis, goats, if not immune, are rarely affected by it.

KEEPING SHEEP FOR MILK

As it is by no means generally known in this country—indeed, I have never heard anyone speak of it, nor have I read anything about it—that the sheep can be profitably used for producing milk, I venture to add a section about the “milk sheep.”

When in Holland lately I was struck by the number of small holders who milked their ewes. It seems to be considered that the best sheep for the purpose is the Texel crossed with the Lincoln. I saw a highly-bred Frisian sheep on the farm of Mr. Kuperus, of Marssum. Although it is not considered to be the very best type of sheep for milking purposes, this particular animal displayed an udder of considerable size, and was, indeed, just about to be milked for the second time in the day.

I gathered that a good milk sheep, nearly a year old, and about to lamb, could be bought for £2 10s. at the outside.

The sheep lambs in February or March, and the disposal of lamb or lambs takes place in May. The lamb brings 30s.

From May till October the owner of the sheep has her milk, 2 litres a day, for a considerable period. Two litres are, roughly, $3\frac{1}{2}$ pints. If in October the sheep is taken into the yard and given cake, she may still be giving a little milk in January—perhaps a third of a pint.

The value of the wool is put at half a crown.

The yield of a sheep is apparently that of an ordinary goat.

The drawback to a goat is its mischievous propensities and its restlessness. It is “neither to

hold nor to bind." A sheep will stand tethering like a goat—I saw scores tethered in orchards in Holland—but makes less fuss. Again, though a sheep has been seen to rise on its hind-legs to bark trees, it is not so likely to do this as a goat. The protection of trees up to 5 feet would probably be sufficient. My trees, with protection up to nearly 6 feet, are by no means safe when the goats are near them. The goats stand up on their hind-legs and bark the branches. They even contrive to gnaw the bark of the trunk in places, though it is covered by $\frac{3}{4}$ -inch netting.

The milk of the sheep is more valuable in point of fat than goat's milk, which is in turn, as is well known, richer than cow's milk. Here are the comparative figures (McConnell) :

Animal.	Fat.	Casein.	Albumin.	Milk-Sugar.	Ash.	Total Solids.	Water.
Cow ...	3'73	3'04	0'54	4'90	0'71	12'92	87'08
Goat ...	4'78	3'20	1'09	4'46	0'76	14'29	85'71
Ewe ...	6'86	4'97	1'55	4'91	0'89	19'18	80'82

It is not only that the milk is better : there is the value of the lambs and wool. Lambs are marketable ; kids are not.

I venture to think that the claims of the ewe as milk-producer for small holders is worth consideration in this country.

If some one could persuade the Board of Agriculture to allow the importation of a good milking ewe and a ram from a good milking mother, and manage the resulting herds carefully, the yield of

milk could be considerably improved in a few generations.

Possibly a good milking strain could be evolved from one of our home breeds of sheep. The thing to do would be to interest an intelligent shepherd in the subject. If any reader obtains any light on the subject I should be glad to hear from him.

It is possible, of course, that a difficulty of obtaining the services of a ram might stand in the way of many a small holder keeping a milk sheep. Most rams have "a bit of blood in them," and their owners might not care for Tom, Dick, and Harry to get it in their lambs. But there is also in many districts considerable difficulty in obtaining the services of a billy goat. No one will keep the stinking animal who can avoid it. It takes a lot of shilling stud fees to reconcile most folk to keeping a billy goat. Usually the folk who keep it do so because they believe with them of old time that its presence has a healthful effect on their cows.

The Frisian sheep has a pure white head and long ears; but its most distinguishing features are its broad nose and its short woolless tail.

I may add that in Iceland ewes are penned and milked—as, indeed, was the case in our own country in Saxon times.

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- I. The Secretary of the National Poultry Organization Society Cross-Examined
- II. A Poultry Farmer's Statement

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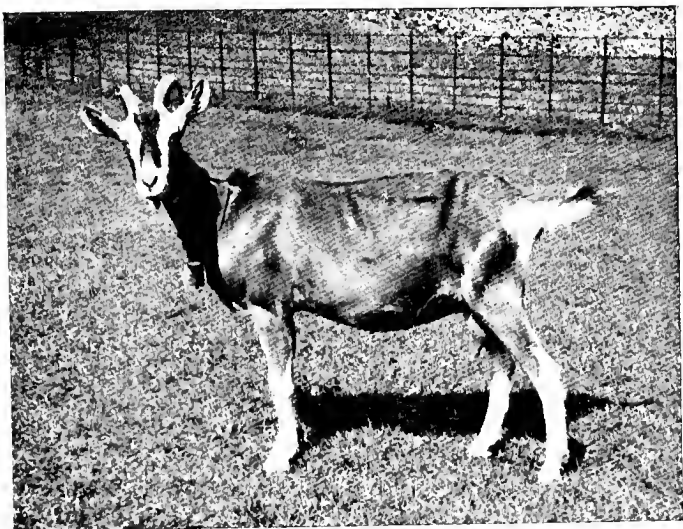
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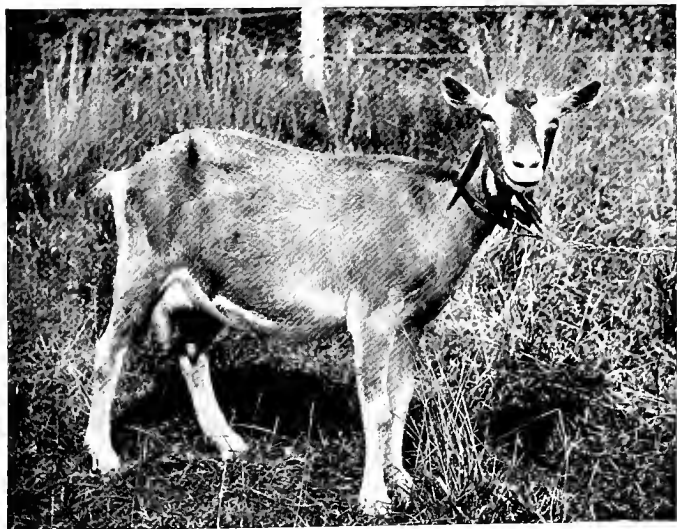
week, and thousands which yield a somewhat smaller quantity. Undoubtedly the average milk yields in this country have risen largely during the last few years. As far back as 1899, however, a herd of five goats kept by Mr. C. A. Gates, of Guildford, produced in a year over 3 tons of milk, or as much as would fill forty-two large railway churns. The daily average per goat for nine months was over 5 pints. Mr. Bryan Hook's Uma gave 10 cwt. 66 pounds in 1898. Mr. Woodiwiss says he has known only two goats which gave over a gallon. (A gallon is 10 pounds.) The author of "*La Chèvre*" says he knows of an Alpine goat which, "when newly kidded, and as a result of a remarkable appetite and of special feeding, gave 8 litres [say 7 quarts] daily for three weeks"!

SUPERIORITY OF GOAT'S MILK TO COW'S.—As to the quality of goat's milk, it is little wonder that the public should be under a misapprehension, for even Dr. Freyberger, pathologist to the London County Council, is reported to have said at an inquest (*Daily*



THREE-QUARTERS TOGGENBURG.

Gave half a ton of milk in the year. Owner, Mr. Bryan Hook



TOGGENBURG.

Gave 166½ gallons between March 27th and December 10th, 1898. Owner, Mr. C. A. Gates.

centage constituents of human, cow's, and goat's milk as follows :

Milk.	Total Solids.	Proteids.	Fats.	Lactose or Milk-Sugar.	Salts.	Water.
Human	12.59	2.29	3.78	6.21	0.31	87.41
Cow's	12.83	3.55	3.69	4.88	0.71	87.17
Goat's	14.29	4.29	4.78	4.46	0.76	85.71

As Dr. Freyberger spoke of skimmed milk, it may be mentioned that its chief components are: proteids 4.03, sugar 4.04, fat 1.0, and water 90.12.

ITS GOOD EFFECT ON CHILDREN.—The London County Council pathologist might also be referred to Dr. Eustace Smith's well-known work on "The Wasting Diseases of Infants and Children," in which we read: "With some children, in spite of all possible precautions, cow's milk, however carefully it may be prepared and administered, cannot be digested. . . . In such cases, if there are objections to a wet nurse, recourse must be had to the milk of some other animal, and preference should be given to a milk which



I.—Expectation.



II.—Realisation.

THE "DIRECT SUPPLY" SYSTEM IN FRANCE !

The goats are evidently French crossed with Alpine.

[To face p. 13

